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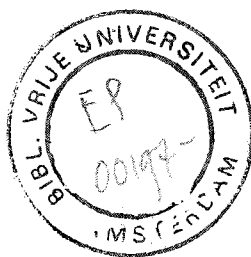
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**DYNAMICS OF
ORGANIZATIONAL LEARNING**

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Referent : prof. J.G. March



TO MY PARENTS

PREFACE

This book reflects a doctoral research conducted from April 1992 to October 1996. In this period, I tried to explore the concept of organizational learning with the idea of providing it with more theoretical underpinnings than it had known in the past.

Although the concept of organizational learning is very popular at the moment, it lacks any mutually agreed upon description, definition, or theory. In fact, the interest in organizational learning is so widespread that its literature reflects at least six different perspectives. In this thesis I have tried to integrate these perspectives by borrowing the most valuable aspects of each one and by trying to avoid various biases also present in them. In addition, partly as a result of this integration, I have tried to introduce a more 'realistic' perspective on learning. In this preface, I will elaborate a bit more on the latter contribution of this thesis.

One of the most popular perspectives in the literature at the moment is the one called the "Learning Organization." A learning organization can be seen as a specific type of organization which is designed to foster positive learning outcomes such as improvement, intelligence, and innovation. These outcomes can be realized through flexible work design, teams, open communication, and an inspiring and supportive style of management. It is very clear that these and other ingredients of a learning organization do sound attractive. However, the problem is that current researchers cannot produce convincing arguments about the dynamics which underlie the process of learning. In fact, the literature remains conspicuously silent on the question of how such organizational delight is to be achieved.

In order to contribute to closing this knowledge gap, I choose to approach organizational learning as a process instead of as an outcome. A process perspective is more likely to reveal the underlying dynamics of learning which either produce or impede positively valued outcomes. In fact, every organization is a learning organization whose nature depends basically on the underlying dynamics of learning.

I perceive organizational learning as a process of evolution: the organization develops over time as a result of construction and reconstruction of organizational knowledge. This development can result in improvement, but it can also cause inertia or

even self-destruction.

Organizations learn through their members: organizational members introduce new knowledge into the organization which is subsequently shared by other members. This is how it becomes organizational knowledge. Organizational knowledge, in turn, influences subsequent processes of introducing knowledge. These processes of externalization, objectification, and internalization of knowledge, is what I term "Internal Learning". Internal learning can be susceptible to various inefficiencies. For example, determination of what knowledge becomes organizational knowledge is often influenced by the exercise of power.

There are various ways in which new knowledge is introduced into the organization. To give an example, the university as an organization may learn from its students - through for instance participation in committees or during day to day encounters - that its current activities are not meeting student needs. When this feedback knowledge results in changing the curriculum, in changing the ways it approaches students, or in changing perceptions of its relation with the environment, then the university has learned. This so-called "Feedback learning" can be influenced by various underlying dynamics which may in fact complicate the learning process. For example, the university may translate feedback information it receives in a different way from the one students intended. Or, it may select only certain environments from which it wants to learn, and filter out or exclude others.

New knowledge can also be introduced through the imitation of other organizations. Take for example an organization that hires a business consultant in the hope of solving some persistent organizational problems. This consultant brings with her specific knowledge that she has gained during her professional education as well as during her previous consulting projects. Say that this knowledge concerns a new system design methodology. After a period of time in which the methodology comes to be implemented, organizational members get used to this new system design; the new methodology becomes part of organizational knowledge and is then taken for granted. At this point, we could say that the organization has learned a new methodology through diffusion of external knowledge. This particular learning process is called "Learning from others". However, learning from others may also result in various inefficiencies if, for example, existing organizational knowledge does not match the new knowledge, or if the organization has only limited access to models it can potentially imitate.

Finally, introduction of new knowledge can be a result of experimenting and

creativity. Instead of adapting to external knowledge, the organization learns from new ideas created by its members. Imagine an organizational member - motivated to alleviate some anxiety in his work - who starts thinking about possible alternative courses the organization can take. While discussing present use of an existing technology, he stimulates a group of people to explore possible alternative usages. Through brainstorming and informal networking, new ideas are generated, tried out, adjusted, and introduced to a larger group of organizational members. Over time, the new idea results in an innovation: the organization uses the technology for any purpose it deems fit.

This type of success story resembles learning which occurs in so-called "Learning Organizations." However, there are various tendencies which obstruct this "Creative learning" process. For example, organizations are often risk averse; this means that there is a shortage of slack resources in terms of money, experience, skills, and external contacts at their disposal. Conversely, organizations can also be too risk seeking and thereby unable to exploit experiences gained during experimenting.

Avoiding inefficiencies which may occur during various types of learning, is clearly one step toward successful outcomes of learning. What is also needed is to balance the four types of learning. If one type of learning predominates in the organization, negative outcomes may be produced, either in the short or the long run. For instance, when an organization relies mainly on feedback information, its evolution will most likely be characterized by path dependency. It learns from its own experience without considering alternative courses of action. To avoid this path dependency, organizations need to complement their learning with the experience of other organizations as well as with experience obtained through creativity and experimenting. The same is true for other types of learning: too much focus on one type of learning results in path dependent evolution or other negative outcomes of learning.

Because of these and many other dynamics that underlie organizational learning, a more realistic view is needed to approach the concept than has been previously put forward. Although it is very attractive to imagine "learning organizations" which are flexible, innovative, tolerant, and inspiring, it is first of all necessary to analyze the way organizations really learn, to understand the complexities which may frustrate positive outcomes from occurring, and to explore possibilities for coping with these complexities. If such a process is realized, then more successful outcomes of learning might be promoted.

In the years I conducted my research, I encountered various reactions from at least four groups of individuals.

One group asked me whenever I told them about my research: "What is organizational learning anyway?". This group mainly consisted of people I knew from outside academic and organizational life. In pursuing this matter, they often gave me a hard time, especially at the beginning of my research. Depending on the time and on the context, I gave them different answers. To be honest, it took me years to understand what organizational learning could mean.

I hope that these people will read what I have written, or at least ask me the question once again.

A second group reacted to my endeavors by thinking or saying: "Let's see what she makes of it all...". This group consisted mainly of fellow researchers who had also studied organizational learning; some had just started their projects, others began research but eventually gave up, or replaced the word 'learning' with 'change.'

I am curious to know what they will think of this thesis. Although the work had to be finished because of time constraints, it is still far from complete. I am looking forward to continuing our discussions about the theoretical foundations of 'organizational learning'.

A third group of individuals used to think - although they often refrained from saying - "Oh no, not again!" In general, this group consisted of organizational practitioners who became fed up with all the books, conferences, and workshops which dealt with this subject. These people experienced all the output, but still did not have a clue what organizational learning meant.

Clearly, this is not due to their own ignorance; rather the opposite. So much of what has been said about organizational learning (or the learning company) in the past few years may appear attractive at first glance. However, upon further reflection, the texts ring hollow as the reader takes the time to think them over. I hope my fellow enthusiasts do not give up completely, and are still willing to read this thesis on organizational learning.

Fortunately, there was still a fourth group. These people exclaimed "Interesting!" whenever I related my research efforts. Either they did not give up on the project, or they sought to promote learning processes in their own organizations, or, they were just nice people.

I hope they will enjoy reading the book.

Acknowledgements

I would like to thank everyone who helped me think, search, and explore, and who provided an inspiring and supportive environment.

First of all, there is Michael Heng. He stimulated me to think big and act small: an attractive philosophy since it not only inspired me to read classics and to explore the fundamentals of organization theory but it also kept me active and optimistic during the whole project. I thank him for initiating the research and for his advice throughout the four years of my study.

Some students require strict guidance from their advisors, especially at the beginning of their research. Others are happy in a more playful environment. I certainly belong to the latter group. I am very grateful for Guus Holtgreffe, my promotor, for acknowledging this. I also thank him for reviewing the various drafts of the thesis.

Of course, starting research by playing around has the danger of letting the student sink into academic quicksand. In addition to Michael and Guus, there are many other people who helped prevent this from happening to me. In the early beginnings there were Martin Boogaard and Sven Fischer who showed me that being a Ph.D. student and writing scientific papers is not such a tedious job after all. I also profited a lot from discussions with Jan Achterberg, Rob Buitendijk, Herman Coenen, Rob Hundman, Steve Peters, and Anselm Strauss, who helped me understand what I was doing and gave me the opportunity to carry out the research.

Then of course, there are my other colleagues with whom I like to work, to discuss research, to talk babies, to drink beer, and to have fun: Heico van der Blonk, Marcel Creemers, Frank Derksen, Han Gerrits, Ypke Hiemstra, Astrid Mantel, Irene Lammers, Martin Misseyer, Mike Newman, Gerlof Sijtsma, Edu Spoor, René Wagenaar, and Marcel Wieser. Together they make the "BIK" group a very pleasant environment.

A welcome change in research life was my stay at Stanford University from December 1993 until September 1994. In these months, I learned that reading and conducting organizational research can be very exciting. I owe a lot for that to Jim March. He showed me the fun side of organizational life, both theoretically and in practice. Above all, I have profited a lot from his advice on my research and his introduction to the 'basics' of organizational learning.

I also have good memories of the many inspiring discussions I had with the researchers I met at Stanford. In particular I thank Kjersti Halvorsen and Philipp Genschel

for cheering up Palo Alto. Many thanks also to Barbara Beuche for her ever-lasting friendly assistance and care.

Back in Holland, it was time to stop playing around and actually set down in words what I had learned. A period of solitary research set in. Fortunately, in this period I met Ariane von Raesfeld who prevented me from becoming completely isolated. I really enjoyed the challenging 'interactions' we had both socially and scientifically.

After the first 'final' version of the thesis was completed, I asked some people to read it. I am very grateful to both Ariane von Raesfeld and Heico van der Blonk for their serious review of the thesis. Harriet Mowshowitz was the last one who helped me with the completion of the work. I very much appreciate her help in editing the text.

Back home, there are my family and friends to whom I am grateful for showing me that there is more to life than doing research.

Some people think that combining research with a baby is a very strenuous job; and they are probably right. In my case I was lucky. Thanks to Abel for being so sweet, for keeping me happy while I struggled with the thesis, and for making my life a bit more orderly. Of course, I owe a lot to my Leo who carried me - as always - through the whole project. Finally, I thank my parents for all their support and enthusiasm. To them I dedicate this book.

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

The concept of organizational learning has never been as popular as it is today. The odds are high that random browsing through one of the many organization and management journals will reveal at least one article on the subject. Organizational learning seems to be a bandwagon every organization wants to get on or should at least try to get on. Strange as it may seem, there is at the same time a lack of a shared understanding of its meaning.

What is organizational learning? Ask a random researcher or practitioner within the world of organizations, and again the odds are high that he or she cannot give you a satisfactory answer. General awareness about the importance of organizational learning seems to be combined with a general ignorance about its meaning. Although articles, books, congresses, special issues of journals on the topic proliferate¹, consensus about what learning is and how it occurs is difficult to achieve. Multiple perspectives exist at the same time, each isolating interesting aspects of learning.

One important source of this ambiguity is the confusion in the literature between an 'outcome' and a 'process' perspective on organizational learning (Dodgson 1993, March 1994). Most definitions of learning tend to focus on outcomes of learning, as opposed to what learning is and how these outcomes are achieved. Most contributions use the concept when referring to a flexible organization, to proactive behavior, to organizational intelligence etc. Because of dominance of the 'outcome' perspective, it remains rather obscure how these improvements come about. Clearly, learning is a process and should be studied as such. Just as research on individual learning should not be restricted to studying intelligent people, neither should organizational learning be studied by only analyzing efficient organizations.

¹ During the 1990's, 184 articles on organizational learning were published in international journals. This can be compared to 50 articles during 1980's, 19 during the 1970's, and 3 during the 1960's (Crossan and Guatto 1996)

This observation has important implications for the study of organizational learning. In this thesis learning is defined as the process of (re)constructing organizational knowledge. Whether this process leads to improvement will be treated as a question to be addressed rather than a presupposition.

Given that organizational life is often far from being rational (March 1995), the same can be said for its learning behavior (March and Olsen 1976). Cognitive blinkers, structural complexities, myopic forces etc. may all complicate the learning process. Consequently, the outcomes of learning are often far from yielding an increase in intelligence, creativity or whatever improvement the organization is seeking. Studying organizational learning means addressing the processes along which organizational knowledge is (re)constructed. The question of how to improve through learning should be addressed by paying attention to the many traps and obstacles that can be found on the road to 'successful' outcomes of learning. Awareness as well as the effort to overcome these hindrances increases the possibility of meeting 'successful' outcomes.

One of the dangers of the present vagueness that characterizes organizational learning is that it may soon be played down as just another buzzword of the *fin du siecle*. To avoid such a premature death, theoretical clarity is needed. Consequently, the purpose of this thesis is to help understand the concept of organizational learning. To be sure, no claim is made here to present an alternative perspective on learning as being the only one which is authentic, legitimate and valuable. Rather, the perspective on organizational learning presented in this thesis should be read as one possible approach to the concept which may stimulate and encourage the ongoing debate on organizational learning.

The general research issues behind this thesis comprise the following questions:

How to cope with the ambiguity that characterizes the literature on organizational learning, and what are the implications for organizations that want to improve their learning?

The way I will approach this task differs at least in three respects from existing literature:

- 1 The thesis borrows many of the fruitful ideas that already exist in literature on organizational learning.
2. Existing literature will be complemented with aspects that have been previously overlooked or that have been given disproportionately less attention.
3. The thesis is based on the idea that the process of organizational learning is full of impediments which should be acknowledged whenever organizations are striving for improvement.

This, then, in short reflects the structure of this work. After first having critically reviewed the existing literature on organizational learning, an alternative perspective on the concept is provided followed by its practical implications.

Every text has its personal touch and this present text constitutes no exception. The study approaches organizational learning as a social phenomenon in which social interactions between human beings are emphasized. Organizations are considered from a perspective that in some respects is rather similar to the interpretive perspective, and specifically to the constructivists' view on organization and communication (e.g. Putnam and Pacanowsky 1982, Strauss 1978, Weick 1979). These authors assume that organizational reality is socially constructed by means of communication. According to these constructivists, an organization emerges through the interaction of people.

However, the ideas put forward here differ from a pure constructivist outlook in that structural and institutional conditions are also emphasized which may interfere with this construction of reality. Individuals are certainly not 'free' in (re)constructing whatever knowledge they wish.

Secondly, the thesis goes beyond mere theoretical descriptions of processes that do or do not construct organizational knowledge. In line with the functionalistic approach, I will also elaborate on the implications for organizational practitioners as well as for the role of information systems during learning.

Hence, the ideas that lie behind the thesis can be considered as a combination of interpretive and functionalistic perspectives on organizations and on organizational learning in particular.

A rather broad definition of organizations will be used. Organizations will be seen as goal-oriented entities consisting of human beings interacting with each other, with their identity as a product of these interactions. Multi-national corporations, departments, teams and informal networks, etc., all fall within this broad definition.

Where the boundaries of these entities can be drawn depends on one's level of analysis. Boundaries are subjectively perceived. Consequently, whenever I talk about the environment, I refer to those people and organizations that do not belong to the subjectively defined group of insiders.

Below a short overview of the basic arguments regarding the process of organizational learning is given. Thereafter, I will clarify the research method that lies behind this thesis. Finally, a short guided tour of the research is given.

1.2 FOUNDATIONS OF ORGANIZATIONAL LEARNING

The theory of organizational learning proposed in this work differs in many regards from the traditional treatment of the topic.

First of all, in this thesis learning is approached from a higher level of generality. The level of generality is considered by addressing the following question: can the concept be based on single or multiple world views on organizations? Generic concepts can be analyzed with multiple perspectives while perspective-specific concepts are more connected to a single perspective. Examples of generic concepts are organizational phenomena such as organizational culture, decision making, or communication. Examples of perspective-specific concepts are, for example, management tools such as Total Quality Management but they also include organizational phenomena such as planning and control². In contrast to these perspective-specific concepts, generic concepts extend beyond a particular type or form of organization, or beyond particular images, perspectives, and metaphors. Decision making for example, can be analyzed from various images. The same is true for organizational learning (Huysman et al 1993). A bureaucratic

² For example, whereas the concept of Total Quality Management is based on an 'organic' image of organizations, planning and control predominantly belong to the machine image (Morgan 1986).

view of organizations yields a completely different image of learning from a cultural view³.

Usually, organizational learning is approached as a perspective-specific concept. In fact, organizational learning is most often seen as a management tool. With the use of organizational learning, management is believed to be better able to turn the organization into a more adaptive firm.

A perception of organizational learning as a generic organizational process differs from many popular writings on organizational learning and 'the learning organization' which use the concept as an expression of flexibility, change, and innovation (e.g. Burgelman 1990, De Geus 1988, Garvin 1993, Senge 1992, Stalk et al 1992, Stata 1989). These characteristics are often equated with organizational forms - such as the post-industrial organization (Huber 1984), the post-modern organization (Clegg 1990), and the learning organization (Senge 1992) - that are able to counter-balance the mechanistic and bureaucratic principles that dominate many - industrial and modern - organizations.

At their most extreme position, the latest contributions to organizational learning could be seen as a contemporary revival of Ford's principle of "the one best way of organizing". Just as Scientific Management claimed that there was only one organizational principle that would assure survival, popular writers on organizational learning assert virtually the same position. It seems as if they have ignored the evolution of organization theory that followed Scientific Management. Contingency theory - for example - taught us that various factors such as task complexity, the environment, and technology influence the way to organize. Later on, this theory was criticized for its deterministic view (e.g. Pennings 1992, Scott 1990). Structures for example are viewed as static systems instead of as a process (Giddens 1976, 1979, 1984, Strauss 1978), whereas technologies and environments are viewed as determining organizational behavior without recognizing either social constructivism (Pinch and Bijker 1984) or enactment processes (Weick 1979).

Hence, instead of one dominant organizational form that is tailor-made, a perspective of organizational learning is needed that can tolerate many viewpoints.

³ The occurrence of general phenomena does not necessarily imply that when the social scientist tries to analyze the phenomenon, this analysis is free of any subjective thought. On the contrary, social scientists are human beings and as such have their own assumptions about "reality" (Kuhn 1970, Latour 1987). How I have coped with this subjectivity in research method will be discussed in a separate section.

In this thesis, organizational learning is approached as a generic organizational phenomenon that subsumes organizational learning techniques such as Business Process Redesign, but also refers to processes such as for example imitating, experimenting, simulating, networking etc.

The long history of organizational learning also justifies treating the concept from a higher level of generality (Mirvis 1996). Klumper (1996) for example studied the historical traces of organizational learning and concluded that the concept is perhaps just as old as organization theory itself⁴. In terms of formal organizations, this means that organizational learning originated somewhere during the industrial revolution. In terms of organizations in general, tracing its history hardly seems possible. Searching for its origin is further complicated by the fact that organizational learning can be seen as a new term coined to describe an ever existing process⁵.

Furthermore, ideas about 'reasons' to learn - as addressed in this thesis - make the concept of organizational learning more general than existing perspectives on learning do. Traditionally, organizational learning has been articulated in the language of systems theory. For example, Morgan (1986) refers to the metaphor of a brain as an information processing system in order to describe organizational learning. Argyris and Schön (1978) explicitly refer to various forms of feedback loops. March and Olsen (1976) talk about environmental response and individual adaptation, whereas Senge (1992) bases his learning ideas on Forester's theory of systems dynamics.

Although many learning processes are indeed activated by feedback information with the aim of adapting to environmental changes, it is conceivable that learning can be triggered by other things such as plain chance events, by experimenting, by the drive of some active agents to 'actualize' themselves. Systems theory, although the dominant theory where learning is concerned, is limited to a conception of learning as adaptation

⁴ One of the reasons why the concept is so fashionable may be that organizations experience a growing need to become more adaptable and responsive to change. Secondly and related, as a result of the rapid technological changes, organizations face the need to learn to do things in a new and often radically different way (Dodgson 1993a). Another possible reason is the growth of the "knowledge society" in which knowledge becomes the key organizational resource (Drucker 1988).

⁵ Cyert and March (1963) were probably the first who referred to phenomena currently known as organizational learning.

and as a result does not explicitly acknowledge these alternative triggers to learn.

In addition, the concept has often been approached as a two-sided phenomenon (e.g. Argyris and Schön 1978, Fiol and Lyles 1985, March 1991, Miles and Randolph 1980, Miller and Friesen 1980, Senge 1990). Most of these contributions use this two-sided aspect of organizational learning as a dichotomy. Either the organization engages in single loop learning or in double loop learning (Argyris and Schön 1978), in lower level learning or in higher level learning (Fiol and Lyles 1985), in adaptive learning or in generative learning (Senge 1990).

By contrast, I will identify various ways in which an organization learns ranging along a continuum from learning of well-known and well-tested ideas to learning new knowledge or innovative ideas. An organization can learn from the knowledge dispersed within the organization; it may learn from feedback information derived from the environment; it may learn from the experience of other organizations; and organizations may learn through the creation of new knowledge. A focus on one of the many ways of learning will produce inefficiencies in the long run. Too much 'internal learning' produces conservatism whereas too much 'creative learning' generates chaos and the inability to learn from experience. This notion that organizational learning can manifest itself differently and that there is no 'one best way' of learning, also contributes to a more general understanding of organizational learning.

Next and closely related to the level of generality, is the idea of learning as being an integral part of organizational evolution. Again, this idea differs from mainstream theories of learning. Many contemporary thinkers perceive learning as a strategic phenomenon (e.g. Burgelman 1990, De Geus 1988, Garvin 1993, Senge 1992, Stalk et al 1992, Stata 1989). The concept of 'the learning organization' explicitly refers to purposeful learning in order to be ahead of one's competitors.

I will argue however that most learning which appears at the strategic level is the result of learning at the operational level. Ex post, it is conceivable to consider traces of learning from experience as strategic avenues, although in practice, the boundaries between operational and strategic organizational learning are blurred. A similar idea has been put forth for example by Mintzberg (1988). According to this author, many so called strategies are often not deliberately planned for, although in retrospect they are perceived as such.

Given that organizational strategies often evolve out of traces from past learning processes, organizational learning can be seen as a process of organizational evolution. An evolutionary process refers to a history dependent, incremental process in which the organizational past can be seen as imposing itself on the present through retention of organizational experience in organizational knowledge. (Levitt and March 1988). This history is not a straightforward process. Organizations face various problems and unforeseen events during learning. As a result, the evolutionary nature of learning is what may be characterized as meandering (March 1990). Because the course of the evolution depends upon the sequence of particular branches that are realized along the way, organizational learning processes are not easily predictable. This has obvious implications for strategic planning processes, and for the effort for radical change, "double loop learning" (Argyris and Schön 1978), or "generative learning" (Senge 1990).

Its evolutionary character notwithstanding, organizational learning can also lead to periods of revolution. In fact, this is what Argyris and Schön (1978) have called single loop versus double loop learning. Whereas single loop learning refers to learning by improving, double loop learning refers to learning by transforming. The evolutionary concept of organizational learning proposed in this thesis has a more modest approach to the idea of double loop learning. I do not want to deny that periods of revolution exist. However, in line with the -incremental- innovation theories on organizational learning (Nelson and Winter 1982, Rosenberg 1982, Sahal 1981), the process towards revolution is one of evolution.

In addition to the questions why and how organizations learn, ideas on learning that will be introduced in this thesis depart from most writings on learning where the issue 'who learns' is concerned.

The interest in organizational learning can be positioned along a continuum; along this continuum range perspectives which treat organizational learning as an individual phenomenon, to perspectives treating organizational learning as a collective phenomenon.

Whenever organizational learning is treated as an individual phenomenon, the only learning that occurs within the organization is the learning of the individual members of

an organization⁶.

At the other extreme of the continuum, organizational learning is something different than the aggregate of individual learning. Learning can be regarded as a social process rather than a psychological process. It was Emile Durkheim (1964) who first came up with the idea that collective phenomena or 'social facts' as he labeled them, have to be dealt with differently than individual phenomena. Social facts, like organizational learning, arise out of human relationships and human association. Just as a fashion cannot be reduced to individual cases without losing its essential meaning, so too organizational learning cannot simply be reduced to individual learning.

In this thesis a middle of the road viewpoint is taken. The following observation of Hedberg corresponds to the greatest degree with this viewpoint:

"Although organizational learning occurs through individuals, it would be a mistake to conclude that organizational learning is nothing but the cumulative result of their members' learning. Organizations do not have brains, but they have cognitive systems and memories. As individuals develop their personalities, personal habits, and beliefs over time, organizations develop world views and ideologies. Members come and go, and leadership changes, but organizations' memories preserve certain behaviors, mental maps, norms and values over time (Hedberg 1981, p. 6)

To summarize the discussion so far, it can be seen that in this thesis organizational learning is perceived as a rather fundamental organizational process. Several features can be identified that are distinctive to this approach to organizational learning and that characterize it as having a more generic character when compared to traditional theories of organizational learning.

Learning is seen as a meandering evolutionary process that can neither be easily planned or anticipated. In addition to this observation and closely related to it, reasons to learn go beyond mere system theoretical explanations such as adaptation to environmental changes. There are many triggers to learning that may be discerned, which also influence the actual process of learning. There is not **one** best way of learning; every process of

⁶ For example, at a congress on "the learning organization", Utrecht 19 May 1992, the overwhelming conclusion was that organizational learning is an utopian concept. This was mainly suggested because organizational learning was approached as essentially a collection of the learning of individuals.

learning may be valuable in its own right. Learning is considered as a mixture of various processes of knowledge construction. Furthermore, organizational learning is perceived as a dual process whereby the organizational code learns from the individuals in it just as much as the individual learns from the organization.

1.3 RESEARCH METHODOLOGY

Given that the process of organizational learning has only sporadically been the subject of theoretical examination, studying the topic calls for a methodology that allows for theoretical exploration. However, whereas research methods which support the process of merely empirical exploration have received increased attention, the same cannot be said for methods supporting merely theoretical exploration⁷. Nevertheless, general ideas which govern conduct of empirical exploratory studies can also be seen to apply to theoretical explorative studies.

The methodology of carrying out exploratory case studies and analyzing the resultant research material has been addressed thoroughly (e.g. Agar 1986, Coenen 1988, Glaser and Strauss 1976, Maso 1988). The general idea is that the researcher enters a research field, for example an organization, with the aim of developing pertinent hypotheses and propositions for further inquiry⁸. He or she starts without preconceived ideas about what will be encountered or about how it will be interpreted and analyzed.

Ethnographic studies have proven to be a valuable research method where conduct of exploratory case studies. Ethnographic research deals with the study of cultures, norms, values, behaviors etc. and assumes that one may only come to understand these aspects when they are observed by an outsider. Or as Kluckhorn once remarked: "It would hardly be fish who discovered the existence of water" (in Wolcott 1975, p. 115). Thus, contrary

⁷ Exploratory research is seldom totally empirical or theoretical. During theoretical exploration, the researcher makes use of insights obtained from existing theories as well as from first and second hand observations from practice. What makes the two distinct is that empirical exploration is predominantly based on ideas derived from empirical observations whereas theoretical exploration is merely based on ideas derived from existing theories.

⁸ Given this ultimate aim of an exploratory study, this thesis will end with possible theoretical hypothesis and recommendations for further research.

to the more generally accepted methods dealing with explanatory questions such as surveys (Yin 1989), ethnographic studies cannot be programmed into a fixed research design because the researcher has only limited initial knowledge about the research object (Hammersley and Atkinson 1983). Of course, complete absence of prior knowledge is an unrealistic condition. Indeed, some prior knowledge may even be useful when entering the field of research.

"Good training in theory, and acquaintance with its latest results is not identical with being burdened with 'preconceived ideas'. If a man sets out on an expedition, determined to prove certain hypotheses, if he is incapable of changing his views constantly and casting them off ungrudgingly under the pressure of evidence, needless to say his work will be worthless. But the more he is in the habit of moulding his theories according to facts, and of seeing facts in their bearing upon theory, the better he is equipped for the work. Preconceived ideas are pernicious in any scientific work, but foreshadowed problems are the main endowment of a scientific thinker, and these problems are first revealed to the observer by his theoretical studies"
(Malinowski 1922, cited by van Sluijs 1991)

What has been said about empirical exploration or ethnography in specific can be translated into conditions of theoretical exploration. The lack of research standards that guide the process of gathering and analyzing data is conspicuous for both types of research methods. Furthermore, whereas empirical exploration starts with limited knowledge of what will be studied because this would bias the research, theoretical exploration starts with limited knowledge simply because this knowledge is lacking. But, as Malinowski remarked, some knowledge of the domain of interest is needed in that it helps to direct the search process and aids in interpreting the information one encounters.

Exploration requires an open-minded approach to the domain of research. During empirical exploration, "to look a fool for the sake of science" (Kirk and Miller 1986, p. 49) yields the most fruitful insights. During theoretical exploration, this open-minded approach is first of all supported when the research is characterized by pluralism. Feyerabend (1975) is a well known advocate of such pluralistic methodology:

"A scientist who is interested in maximal empirical content, and who wants to understand as many aspects of his theory as possible, will accordingly adopt a

pluralistic methodology, he will compare theories with other theories rather than with 'experience', 'data', or 'facts', and he will try to improve rather than discard the views that appear to lose in the competition. For the alternatives, which he needs to keep the contest going, may be taken from the past as well. As a matter of fact, they may be taken from wherever one is able to find them - from ancient myths and modern prejudices; from the lucubrations of experts and from the fantasies of cranks." (Feyerabend 1975, p. 47)

To illustrate the use of the research methodologies that lie behind the present study, while conducting a merely theoretical, exploratory study, I will describe the personal exploratory search process that marked the four years of conducting this research^{9 10}.

Research for this work started in April 1992 with the tentative title: "The use of information and information systems to promote organizational learning"¹¹. Because I had no idea what organizational learning really meant, I began the research with a theoretical exploration of the concept. During the first half year I used the library of various universities as my main source of information. Reading one article after the other on organizational learning, I learned that the concept is extremely vague. Although a lot has been written about the concept, a generally accepted notion seemed to be lacking¹². This absence led to my first 'research breakpoint': the existing literature seemed to be incapable of providing a clear enough notion of what organizational learning means, and

⁹ Such an explanation of the efforts that lie behind a study is most often subject of the first part of the report: the preface. In this preface, researchers openly confess what a hassle the research has been, how many obstacles had to be challenged, and how in practice the general expected research-sequence was mixed up. This practice seldom is conceived as important and is consequently treated as funny yet irrelevant 'preface-remarks'. This idea is expressed by Pettigrew (1985): "*Contrary to the way the practice of research is often taught and written up, the activity of research is clearly a social process and not merely a rationally contrived act. Furthermore, it is a social process descriptively more easily characterized in the language of muddling through, incrementalism, and political process than it is rational, goal-directed activity*". As a result, junior researchers learn from lies and learn to pass them on.

¹⁰ The reader will find a lot of reiteration when dealing with 'creative learning', discussed in chapter seven of this thesis.

¹¹ This work is totally financed by a research project with this tentatively approved title.

¹² This search effort resulted in a paper on the various perspectives on the concept. See chapter two and Huysman (1992).

without a notion of how organizations might learn, it is impossible to say something about the use of information and information systems to promote it. Thus, I had to create my own ideas concerning organizational learning.

If the existing literature does not bring you any further, other methods of research are needed. Consequently, I decided first of all to tap another source of information: personal communication with professionals. I talked with many friends and acquaintances, and friends of friends and acquaintances about their ideas, knowledge, and experiences with learning processes in their (client) organizations. My aim was not so much to learn from them what organizational learning really meant but more to think through what could be considered organizational learning and what could not. One such acquaintance inspired me to tap still another source of information: his own behavior and the learning of the organization for which he was working. This led to my first empirical exploratory study on organizational learning¹³. From this study, I learned many new ideas that had not been reported yet in the research on organizational learning. Furthermore, I began to perceive organizational learning as something rather similar to innovation.

After this study ended, I had the opportunity to study the process by which a large Dutch non-profit organization: "AZ", was becoming a profit organization. Since this reformation had everything to do with innovating, I thought it would provide interesting ideas on organizational learning. Consequently, I decided to spend more than half a year analyzing the learning that took place within the company. After some months, however, it dawned on me that no learning happened, at least not the learning that I had anticipated or the learning that mirrored my initial definition. What to do? I could stop the project and forget about my first impressions, or continue hoping something insightful would eventually emerge. I decided to go for the latter option. Five months of research frustration set in. Boxes full of recorded interviews and piles of written log-books and impressions piled up, while I had no idea how to handle them.

Fortunately, 1993 ended with a pleasant interruption when the opportunity to visit Stanford University for a period of nine months presented itself. I packed all my research material and left for the United States, still hoping that finally something interesting would materialize. My period as a visiting scholar began with attending the course "Advanced

¹³ Findings are described in 'Intermezzo II' of this thesis as well as in Huysman (1996b).

Organization Theory" given by Professor March. I thought this course would temporarily free me of all the troubled thoughts on my research that had kept me busy for almost half a year. The course and the articles discussed influenced me a great deal. The problems I had been having with my research became transformed into 'foreshadowed' problems. Every article discussed suddenly seemed to be relevant to organizational learning. Subsequent courses had the same effect; there was learning within almost every aspect of organizational behavior. Discussions with a large international group of researchers were also extremely inspiring, as was the well-supplied university library. Although I still did not know what organizational learning meant, I was sure that it went beyond notions like innovation.

Full of academic energy, I unpacked my boxes of research material and started to look at them from scratch. During this analysis, I was advised by the indefatigable Professor March. He taught me that there is a clear difference between an outcome perspective (my prior conception of organizational learning) and a process perspective. Furthermore, because of the irrational behavior of organizations, the outcome of learning is often far from things like improvement, intelligence and radical change. This created another 'research-breakpoint'. Suddenly, all my stray ideas on learning fell together. First of all, approaching organizational learning as a process helped to clarify the concept since it explains how organizations really learn, something that is missing in a lot of literature on the concept. Secondly, it helped me to say something about the use of information and information systems during learning. Finally, it made the problem of lack of innovation that I encountered at AZ as irrelevant. In turn, various instances of learning processes and especially problems with learning emerged out of my material.

Back in Holland, my inspiration continued. I finished the paper on the AZ research¹⁴ and reexamined my first study by focussing more on the process instead of the outcome of learning. It was time to write down all my ideas in the form of a thesis, although this had to wait for some time after my (real) baby was born.

Writing is as much part of the exploratory research method as is the first period of searching. Writing the thesis required a clear classification of all my ideas, something I only had done for smaller aspects of the research such as during conferences. My head

¹⁴ The result of this analyzes are reported in "Intermezzo I" of this thesis, and in Huysman (1996a).

was full of ideas, derived from a mixture of personal communication, empirical studies, personal experiences in organizations, literature on organizational learning, literature on organizations in general, sociological literature, etc. etc. How to structure these thoughts? Again, this painful experience was pleasantly interrupted by a planned wintersports holiday. During the first two days I could not stop worrying about my thesis that was still not written. I drew boxes, diagrams, arrows, etc on every paper I came across, even my skipass had a draft of a possible table of contents. Fortunately, skiing took the upperhand and on my way home, dozing off in the train, I suddenly saw the whole thesis in front of me. Subsequently, I spent five months almost non-stop writing.

All these research efforts resulted in the present thesis which departs from the original aim to explore the use of information and information systems in order to promote organizational learning. The four years in which I had to finish the thesis were not enough to provide the concept with theoretically sound arguments in order subsequently to thoroughly analyze its requirements in terms of information systems. Hence, because of time constraints, the present study is restricted to a theoretical exploration of the concept of organizational learning. Although in chapter nine attention is paid to the implications for the information systems discipline, this topic has not become the central issue of the thesis. I do hope however that the thesis provides enough theoretical understanding for future researchers to pursue this research project and study the use of information systems to promote organizational learning.

Before leaving this section, it is necessary to describe what this research does not provide.

The thesis lacks any (statistical) measures that mirror organizational learning capacity. Such an effort would call for a variance approach in which all possible variables that make up an organizational idiosyncratic nature are quantified and measured. Then, by means of multi-variant analysis, these are set against a variable which measures organizational learning capacity. There are several reasons why I have refrained from carrying this out.

First of all, the circumstances that create an organizational identity are so diverse that it is not possible to indicate them a posteriori. Furthermore, measuring these conditions

in terms of quantifiable elements is almost a futile task. For example, how do we measure the genesis of the organization without losing its specific meaning? Thirdly, there is to my knowledge no worthwhile standard that is able to measure organizational learning capacity. What does it mean when organizations score high on its organizational learning-capacity? Does it mean that it is able to change quickly, or that it is able to assimilate new knowledge in a short time? And what about the learning capacity in the long run?

Most importantly, variance analysis is not able to describe *how* this learning takes place in practice. As mentioned earlier, an outcome perspective on organizational learning perceives organizational learning as improvement in outcomes. The organization has learned because it has improved its capacity for doing something. This outcome perspective is however incapable of informing us how and why this learning takes place.

1.4 OVERVIEW OF CHAPTERS

In part one of this thesis the existing literature on organizational learning is reviewed.

Although there is wide acceptance of the notion of organizational learning, no theory or model is widely accepted. In order to provide some insight into this diversity, chapter two highlights different perspectives and assumptions of the concept. Studies are classified into six different perspectives: the adaptation perspective, the incremental innovation perspective, the assumption sharing perspective, the organizational knowledge perspective, the 'learning organization' perspective and the social constructivist perspective.

Chapter three gives a critical examination of the existing literature on organizational learning by discussing its shortcomings. First of all, most writers link learning with improvement while overlooking the fact that learning can also have negative consequences and that frequent change can have its drawbacks. Furthermore, most of the literature on organizational learning is too much focussed on the individual as an active agent of organizational learning leaving the role of institutional aspects rather obscure. Another shortcoming of the existing literature is that most, if not all, theories on learning are based on some translation of systems theory. As a result, other triggers to learning such as chance events are often neglected. In addition, theories are predominantly based on a structural and rational model of organizations, neglecting the unpredictable and

irrational aspects of learning. Finally, the received theories on organizational learning focus on only one or sometimes two types of learning, leaving alternative types of learning untouched.

In order to balance all these biases, alternatives are given that underlie the alternative perspective on organizational learning, presented in part two.

Part two of the thesis presents an alternative perspective of organizational learning by way of introducing a typology of learning. This alternative perspective emphasizes the process character of organizational learning. Four mutually dependent types of organizational learning processes are introduced: internal learning, feedback learning, learning from others and creative learning. Each of these learning types acknowledges the inefficiencies of learning, the reciprocal relation between action and structure, the multiple triggers to learn, and the possibility of unplanned learning.

In chapter four the process of internal learning is discussed. Internal learning can be considered as the backbone of all learning processes. It deals with the institutionalization processes in which individual knowledge is externalized and objectified into organizational knowledge, while this organizational knowledge in turn is internalized by organizational members. Various learning conditions will be discussed that should be taken into account whenever organizations strive for positive outcomes of internal learning. In order to illustrate the traps and obstacles of learning, a case story is presented based on a qualitative case study. It deals with the mutual learning between two groups of information system designers. The story illustrates the complicated nature of organizational learning and serves as a guideline scenario to which I will refer frequently in this and in the next chapters.

In chapter five, the process of feedback learning is treated. Feedback learning occurs whenever organizations learn from their own experience through environmental reactions. The greater part of this chapter is devoted to processes that complicate feedback learning.

Chapter six deals with the process of learning from others. Learning from others occurs when organizations learn from the experiences of other organizations instead of their own experiences. Various processes of imitation are described.

Chapter seven discusses the process of creative learning. This type of learning deals with creating new knowledge. The chapter starts with the presentation of a second

case story concerning the inter-organizational networking of a group of people and in specific of an information technology (IT) champion that led to the 'invention' of a chipcard-idea. This story will be used to illustrate some of the theoretical arguments given in this chapter. As is the case with the other three types of learning, creative learning will not likely result in improvement, intelligence or innovation if it is not balanced with the other types of learning as discussed previously.

Part three provides implications that can be derived from the theoretical arguments put forward in the previous chapters.

Chapter eight has implications for organizational practitioners who seek to promote successful learning. Successful learning refers to, as positively perceived outcomes of learning processes, such as innovation, intelligence and improvement. First, it will be argued that organizations should avoid the occurrence of the various traps and obstacles to learning as discussed in part two. These hinderances to learning are a result of focussed information processing. Various causes of this so called "focussed learning" will be given as well as some general ideas about how to avoid them. In addition to avoiding focussed learning, organizations can improve their learning capacity by balancing and integrating the four types of learning.

Chapter nine deals with implications for the information system discipline. Six information intensive processes that characterize organizational learning will be reviewed in terms of the role of information systems therein. Special attention is given to the issue of how information systems contribute to problems of organizational learning and how this could be avoided.

The thesis ends with concluding remarks, including a summary and implications for further research.

PART ONE

IN SEARCH OF A THEORY OF ORGANIZATIONAL LEARNING

In the next two chapters, existing literature on organizational learning will be reviewed.

In chapter two, six perspectives are considered which can be identified within the literature of organizational learning. I believe these perspectives are distinct enough to treat them separately. Although each perspective has its own strength that should not be ignored, they also have various weaknesses in common.

In chapter three, the existing literature will be critically reviewed by means of five identified 'biases'. These biases concern hidden ideas and assumptions behind the literature that have not been explained. These hidden assumptions or biases assure that the received theories on organizational learning lean unnecessarily in a certain direction while overlooking others. I will try to indicate how these biases could be balanced.

From this search of the concept of organizational learning it follows that there is no ready-made theory on organizational learning and, in fact, that an alternative more integrated perspective on organizational learning is needed. Given that the six identified perspectives all have their own valuable points, it would be a waste to ignore them. Hence, a perspective is needed that integrates all these distinct ideas while at the same time eliminating all identified weaknesses. In other words, through an alternative perspective, one should be able to balance the biases distinguished in chapter three while making use of the identified strong points of ideas already introduced, discussed in chapter two. This alternative perspective is the subject of part two of this thesis.

CHAPTER TWO

DIFFERENT PERSPECTIVES OF ORGANIZATIONAL LEARNING

2.1 INTRODUCTION

In this chapter, most of the existing literature on organizational learning will be surveyed. To provide insight into the common propositions concerning organizational learning, studies are classified into six different perspectives on the subject: the adaptation perspective, the incremental innovation perspective, the assumption sharing perspective, the organizational knowledge perspective, the 'learning organization' perspective, and the social constructivist perspective. These perspectives are believed to be distinct enough in their approach to organizational learning as to treat them as distinct categories. To be sure, such an endeavor is subjective and may produce different outcomes when pursued by others¹⁵.

The purpose of this survey is to provide the reader with an insight into how the concept of organizational learning has been developed so far. This knowledge enables the researcher to position the alternative perspective of organizational learning, introduced in part two.

Every section ends with a short critical note. Since a whole chapter will be devoted on the weaknesses within the literature, I will only discuss the strengths of the various perspectives.

2.2 ADAPTATION PERSPECTIVE

The notion of organizational learning as adaptation originated as an attempt to answer questions raised by the contingency perspective. Viewed within this perspective, organizations are treated as open systems engaged in exchanges with their environments. The central proposition of the contingency theory is that organizational effectiveness is directly related to the degree that internal organizational structures and processes "fit"

¹⁵ The identification of six perspectives is based on personal judgement obtained from an analysis of the existing theories.

characteristics of the organization's environment. As environment changes, these structures and processes must change to maintain this fit.

As a result of this insight, researchers have devoted considerable attention to the question of how to design organizations that meet the demands of the environment. Much of this work has focussed on how organizations deal with the complexity and uncertainty presented by their environment (e.g. Woodward 1958, Burns and Stalker 1961, Lawrence and Lorsch 1967, Galbraith 1973, Mintzberg 1979). It is generally accepted that requirements differ for organizations acting in a simple and/or static environment as opposed to those acting in a complex and/or dynamic environment. Unlike the requirements of a mechanistic organization acting in a certain and static environment, the requirements of the organic organization dealing with an ongoing change of the environment raise many important questions. How can an organization be consistently effective over time given that changes occur in its environment? How is the fit between organizational structures and processes and the characteristics of the environment obtained and more important, maintained? With the rise of organizations acting in turbulent and uncertain environments, these questions have gained prominence in the literature on organizational adaptation as a learning process.

Some researchers have concluded that organizational learning occurs in response to immediate problems, imbalances and difficulties much more than it does in response to deliberate planning (e.g. Cangelosi and Dill 1965). By the identification of 'a performance gap' as a major influence on learning (Downs 1966), organizational learning can be considered as strategies to adapt to changes in the environment.

Cyert and March (1963) also perceive organizational learning as adaptation to changes in the environment. This adaptation focusses on three different phases of the decision-making process: adaptation of goals, adaptation in attention rules, and adaptation in search rules. The behavioral theory of the firm assumes that organizations change their goals on the basis of their experience. Goals are continuously adapted to incorporate the experience of meeting previous year's goals, and also the experience of other organizations in a similar situation. Adaptation in attention rules refers to the selective attention that the organization gives to different parts of the environment. Organizations learn to attend to some parts of the environment and ignore others. Similarly, adaptation in search for solutions is also conditioned by previously tried solutions. Success reinforces

and failure discourages repetition.

March and Olsen (1976) provide an analysis of organizational learning under ambiguity which incorporates limits to learning in organizations. They describe a model of 'simple complete cycle of organizational choice' in which the individual actions affect organizational actions, which in turn affect environmental responses. The environmental responses or acts affect the individual's beliefs and thus his/her behavior. This model of choice serves as a tool for analyzing learning and adaptation by individuals and organizations.

In the years following, March and his colleagues continued publishing on the notion of organizational learning thereby extending the issue of adaptive learning in which the emphasis moved from simple trial and error learning to organizational experience captured in routines (Herriot et al 1988, Levinthal and March 1994, Levitt and March 1988, March 1988, 1991, 1995). Organizations learn by encoding inferences from history into routines that guide behavior. The term routine is a broad one, including forms, rules, procedures, conventions, strategies, and technologies around which organizations are constructed and through which they operate as well as the structure of beliefs, frameworks, paradigms, codes, culture, etc.

March and his colleagues also address the notion of the ecology of learning: learning is embedded in a mosaic of learning. Various learning units learn simultaneously, and their learning also interacts. This makes organizational learning an extremely complex and dynamic process.

Characteristic of all these contributions is that they address the complicated, problematic and less-efficient side of learning. This is also one of the major strengths of the perspective. Unlike most other perspectives that will be discussed, contributions of the adaptation perspective are not averse to showing the inefficiencies of learning. The learning behavior of organizations more often stimulate organizational inertia rather than change, improvement and wisdom. Organizational learning is often path dependent. What has been learned in the past is likely to direct future adaptation processes.

Focusing on the actual learning behavior of organizations is assured by the use of a process perspective on organizational learning. This is in contrast to most other contributions to the literature. Whereas organizational learning is mostly perceived from an outcome perspective, equating learning with improvement and progression, the

adaptation perspective leaves the outcome of learning as an issue of investigation.

2.3 INCREMENTAL INNOVATION

The incremental innovation perspective deals with the process of innovation as being one of incremental learning. Many writers have used the concept of organizational learning to refer to the process of knowledge accumulation during innovation (e.g. Cohen and Levinthal 1990, Nelson and Winter 1982, Pennings and Harianto 1992, Rosenberg and Frischtak 1985 Sahal 1981). These writers all share the view that innovation embodies the generation of new knowledge whereas prior knowledge is presumed to be an important factor in determining whether an innovation is adopted and in what form. For the diffusion of innovations to be successful, it is therefore crucial to determine what information exists already in the organization.

Innovation is treated as an effort to bridge the distance between knowledge currently available and the knowledge that an organization is striving to possess (Pennings and Harianto 1992). By virtue of their unrelatedness with the current organizational knowledge, discontinuous (McKee 1992) or big bang (Gluck 1985) innovations are more likely not to be adopted, or if they are, likely to fail. This general assumption has induced a large majority of innovation researchers to espouse an incremental notion of innovations (Pennings and Harianto 1992).

Nelson and Winter (1982) are one of the best known proponents of an incremental view of innovations. They emphasize that routines play a large role in innovations. Routines spell out the appropriate activities and search for new knowledge. Consequently, innovations are not discontinuous, but rather novel combinations of old routines.

As a result of these routines, each firm is relatively unique in accumulating experience in the use of technology. This knowledge is mostly tacit, and is acquired in problem-solving and trouble-shooting activities within the firm, remaining there in a substantially uncoded state. In the words of Rosenberg and Frischtak:

"(E)ach individual firm is a focus where the progressive accumulation of technical knowledge takes place, with production processes tending to display many specific and idiosyncratic components" (Rosenberg and Frischtak 1985).

Organizations are understood as entities which acquire the capabilities they have through a time-consuming and incremental process of learning. The organizational knowledge, technologies or routines cannot be transformed from one organization to another without recognizing their own internal history. The diffusion of innovations is not as straightforward as some diffusion theorists seem to claim.

Sahal (1981) is another writer who treats the process of innovation as a process of learning. Based on previous studies on technological innovations, he demonstrates that the innovation activity is inherently full of uncertainties and problems. Given an environment of rapid change in either demand or supply conditions as well as the unintended consequences of human action, an explicit demand for a technological innovation cannot be the single determining factor in its development.

Using various case-examples, Sahal demonstrates how often innovations disappear, only to be conceived again at some later point in time when the related necessary know-how becomes available. In between this period, dead-lock or progress takes place.

"A new technology does not emerge like Minerva from Jove's forehead. Typically, it is the outcome of countless improvements in the capabilities of some earlier, less specialized device through the gradual acquisition of practical know-how. Success in technical problem solving is never just a matter of armchair theorizing" (Sahal 1981 p. 111).

Innovation thus is considered a manifestation of learning by doing or learning by experimenting.

Mckee (1992) has tried to combine the economic perspective on learning with an organizational perspective. With the use of Argyris and Schön's (1978) concepts, he shows how single loop learning, double loop learning and deuterio learning are involved in respectively incremental innovation, discontinuous innovation and institutionalization of innovation. Firms engaging in incremental innovation must be supported by single loop learning skills such as increased communication and increase of depth of contact with the environment. Likewise, discontinuous innovation must be supported by for example boundary spanners and slack resources. Institutionalization of innovation is supported with for example structural cross-team contacts and continuous innovation training.

Like the adaptation perspective, this perspective focusses on evolution. Both perspectives argue that history matters during learning. More than the adaptation perspective, the incremental innovation perspective emphasizes the idiosyncratic nature of organizations. It shows that there is no 'one best way of learning'. Every organization has its own way of learning whereas the knowledge that has been institutionalized in one organization cannot be transferred indiscriminately to other organizations. In other words, the perspective counterbalances the optimism with which popular writings on organizational learning stress the urge to unlearn past knowledge and to engage in discontinuous change.

2.4 ASSUMPTION SHARING PERSPECTIVE

The central notion underlying the assumption sharing perspective is that of the organizational 'frame of reference', which is somewhat analogous to Kuhn's (1970) concept of a paradigm. These sets of beliefs or ways of seeing or organizing the principle governing perceptions, are to a large extent particular to a specific organization. That is, an organization is characterized by a paradigm that is shared by organizational members. These paradigms provide a common language which makes possible the sharing of experience and insights among organizational members. Although differently labeled, in most of the literature on organizational learning this idea of the existence of a shared frame of reference has been addressed. Here, it is sufficient to refer to the work of Argyris and Schön (1978) which can be considered as a hall-mark for this perspective.

Although Argyris and Schon talk about "a detection of a mismatch of outcomes to expectation which disconfirm organizational theory-in-use" (Argyris and Schön 1978, p. 19), this detection does not necessarily have to be adaptive. They distinguish incremental adaptive learning (which they label single loop learning) from learning which affects the fundamental organizational theory-in-use (which they label double loop learning) and deutero learning (which means learning how to learn). Single loop learning occurs when error correction proceeds by changing organizational strategies within a constant framework or norms of performance. Double loop learning involves restructuring of organizational norm and restructuring of strategies and assumptions associated with those norms. It involves fundamental changes in the organizational frame of reference or 'theories-in-use' prevalent within the organization.

In their own words, organizational learning is described in the following terms:

"Organizational learning occurs when individuals, acting from their images and maps, detect a match or mismatch of outcome to expectation which confirms or disconfirm organizational theory in use. In the case of disconfirmation, individuals move from error detection to error correction. Error correction takes the form of inquiry. The learning agents must discover the sources of error - that is, they must attribute error to strategies and assumptions in existing theories-in-use. They must invent new strategies, based on new assumptions, in order to correct error. They must produce those strategies. And they must evaluate and generalize the results of that new action. "Error correction" is shorthand for a complex learning cycle" (Argyris and Schön 1978, p.19)

To describe the features of theories-in-use, Argyris and Schön developed two models or ideal types: model I theory-in-use and model II theory-in-use. Model I has to do with theories in use which inhibit double-loop learning. The four governing variables of model I are: (1) achieve the purpose as the actor defines it, (2) win, do not lose, (3) suppress negative feelings, and (4) emphasize rationality. The primary action strategies are to control unilaterally the relevant environment and tasks and to protect oneself and others unilaterally. The consequences of model I strategies include defensive interpersonal and group relationships, low freedom of choice and reduced production of valid information. These are negative consequences for learning because there is little public testing of ideas. The hypotheses that people generate tend to become self-sealing. What learning does occur remains within the bounds of what is acceptable. These defensive loops have been called defensive routines (Argyris 1990). A defensive routine is any action or policy which prevents experiencing embarrassment or threat and simultaneously prevents reducing the causes of the embarrassment or threat.

The governing variables of the alternative model II include (1) valid information, (2) free and informed choice, and (3) internal commitment. In this model, surfacing of conflicting views is encouraged in order to facilitate public testing. The consequences of model II action strategies include minimally defensive interpersonal and group relationships, high freedom of choice and high risk taking. The likelihood of double-loop learning is enhanced, and effectiveness should increase over time.

With its emphasis on self-reflection, there are striking resemblances between this

perspective on organizational learning and psycho-therapy. It is therefore not strange to note that the theory of Argyris and Schön has proven to be a valuable tool for organizational development practices¹⁶.

The strength of this perspective lies predominantly in the notion of double loop learning in relation to single loop learning. The concept stimulates the evaluation of actual learning behaviors in terms of its revolutionary or incremental character. It shows that most of the learning within organizations is of a conservative nature. Organizational members tend to be blind in the face of norms and values that guide their behavior. The notion of double loop learning also stimulates to think of self-reflection as a necessity to challenge these cognitive blinkers.

2.5 ORGANIZATIONAL KNOWLEDGE PERSPECTIVE

The organizational knowledge perspective explicitly deals with learning as the accumulation of organizational knowledge. Just as the work of Argyris and Schön (1978) can be considered as a hallmark for the assumption sharing perspective as described above, the work of Duncan and Weiss (1979) can be seen as representative of the organizational knowledge perspective. Their ideas stimulated followers to link learning with (computerized) information systems.

Duncan and Weiss (1979) argue that organizational effectiveness is determined by the quality of the knowledge base available to the organization for making the crucial strategic choices. Organizational learning then is defined as:

"the process within the organization by which knowledge about action-outcome relationships and the effects of the environment on these relationships is developed"
(Duncan and Weiss 1979, p. 84).

Organizational learning is considered as a continuing evolutionary process whereby

¹⁶ Although they do not explicitly refer to organizational learning, Mason and Mittrof (1981) also promote the idea of organizational self-reflection. They make use of the idea as a way to improve the success of strategic planning. According to these authors, the barriers to this success is often deeply embedded in an organization's social cognitive processes. In order to get a thorough evaluation of the various cognitive models, they have introduced a method for stakeholder analysis and assumptions surfacing. These self-reflecting methods allows the reflecting of espoused strategies against realized strategies. In effect, these methods allows the detection of internal cognitive barriers to strategic plan implementation.

extension and or refining of the knowledge base is the outcome. These increments reflect the addition of new statements of action-outcome relationships which are added to or supercede existing statements.

Occasionally, however, this process is disrupted by 'paradigm revolutions'. These revolutions are caused by experience of performance gaps which cannot be resolved within the paradigm. The revolutions are somewhat similar to the double loop learning process cited by Argyris and Schön (1978).

According to Duncan and Weiss (1979), knowledge is only organizational when it becomes exchanged and accepted by others. In order to perpetuate this process, parts of it are institutionalized in the form of formal learning systems and informal organizational practices. Learning systems are the mechanisms by which learning is perpetuated in the organization.

Examples of these learning systems include strategic planning systems, management information systems, and informal arrangements like informal information and communication networks.

The concept of learning systems brings the concept of organizational learning close to that of (computerized) information systems. Jelinek (1979) is probably one of the first who studied organizational learning systems. She examined organizational learning systems at Texas Instruments which were used to manage the stream of innovative products manufactured by the firm. The O.S.T. (Objectives, Strategies and Tactics) system is a management planning and control system consisting of a series of linkages between long range goals and shorter-range activities and the funding necessary to implement them. The long-range goals look to the future for ten to fifteen years; these are broken up into short run business objectives for each business-unit of Texas Instruments. The strategies provide guidelines for the coming three to four years. Finally the tactical action programs detail the day to day activity with their current funding status. The O.S.T. system is presented as an organizational learning system by which individual insights and knowledge were institutionalized into a systematic procedure for successfully

managing the innovation of new products¹⁷.

Further research on organizational learning systems was conducted by Shrivastava (1981). He documented several organizational learning systems that were encountered in sample organizations. These learning systems included a variety of formal, informal, cultural, and historical schemes for managing the process of knowledge sharing within the organization. Some of the learning systems were systems in the sense of formal management information and control systems, others were systematic ways of viewing organizational problems and sharing them with other organizational members. An important feature of these systems is that they attempt to objectify the subjective personal knowledge of individual members into an organizational knowledge base.

The organizational knowledge perspective is the only perspective that explicitly deals with organizational learning as an information intensive phenomenon. Perceiving organizational learning as such creates the possibility of communicating with the information system-discipline. Not surprisingly, the work of Duncan and Weiss is most often used in those few cases that organizational learning has been subject of explicit information theoretical concern (e.g. Stein and Zwass 1995, Wijnhoven 1995).

2.6 THE 'LEARNING ORGANIZATION'

The learning organization perspective is perhaps the most popular within the management and business literature at the moment. Two related perspectives fall within this category. First, there is the literature that interprets the notion of organizational learning as the idea that the organization needs a brain that will be able to think for the rest of the organization. This is what can be called 'top level learning'. The other related literature sees organizations as organized in such a manner as to be ahead of their

¹⁷ It is striking to note that these systems failed soon after her book was published. According to Mintzberg (1989) this shows that learning can not be institutionalized: "...*Texas Instruments'* own fancy planning system was subsequently believed to discourage innovation. In fact, there never was any evidence that the company's success stemmed from anything more than a capable leader who knew how to learn and whose own energy and enthusiasm enabled him to attract good people and to invigorate them. Good people, of course, make for good organizations. They also design good systems, at least systems that are good for them. But remove the good people and the systems collapse. Innovation, it turned out, could not be institutionalized." (p. 350)

competitors. This organizational form can be called 'strategic learning'.

Learning agents of the top level learning perspective are for example the directors (Garraat 1987), a management team (Stata 1989), or the company's senior managers occupied with strategic planning (De Geus 1988). Garraat's main point of interest is the role of directors in organizations. It seems that, although they are 'at the top', directors do not know what is really going on within the organization while they are expected to know everything. According to Garraat, this striking reality hampers organizational learning processes since for an organization to be effective, it needs a permanent brain. The role of director therefore requires a change in thinking as a specialist ('either/or'-thinking) to thinking as a generalist ('both..and'-thinking). Further, the director must be able to cope with more uncertainty and ambiguity and has to allow synergy between specialisms to operate at the core.

According to De Geus (1988), fundamental changes in organizations' strategies or major innovations depend upon the ability of a company's senior managers to absorb what is going on in the business environment and to act on that information with appropriate business moves. He defines organizational learning as:

"..the process whereby management teams change their shared mental models of their company, their markets and their competitors" (De Geus 1988, p.70).

The emphasis here is on opening up communication and acceptance of the idea that the whole is larger than the sum of the parts.

An innovative aspect is the focus on the roles, skills and tools for leadership in learning organizations.

The 'strategic learning' perspective became popular at the end of the eighties and beginning of the nineties. Senge (1990, 1992) is perhaps the best known and most cited representative of this theory. The best-seller of Peters and Waterman entitled "In search of excellence" (1982) can be seen as the driving force behind the popularity of this approach¹⁸. In this book, bureaucratic, inflexible and rigid organizational forms are

¹⁸ Although the book can be seen as a model for the 'strategic learning' perspective on organizational learning, Peters and Waterman do not explicitly refer to the 'learning organization'.

heavily criticized in order to make room for more open, flexible, lean, action-driven, entrepreneurial organizational forms. These organizational forms encourage pro-active behavior. Adaptation to changing environments no longer fit the present turbulent world of today. What seems to be needed according to these authors are organizations that are able to be ahead of their competitors and other threatening influences in order to create their own future.

These ideas have been picked up by other management writers. The organizational form that encourages pro-active behavior has been labeled 'the learning organization' while the actions within these organizational forms are focussed on creativity, generative learning, inductive reasoning, etc. (e.g. Garvin 1993, Pedler et al 1991, Senge 1992).

Although interested in the role of leaders in a learning organization as well, Senge (1990, 1992) has a more modest interpretation of the brain-like function of the management at the top. He picked up old assumptions of the theory on organizational learning by emphasizing the distinction between adaptive learning and generative learning. Adaptive learning is about coping with the environment and can be seen as the 'adaptive' perspective on learning described in section 2.2. Generative learning is about creating as well as about adapting. It requires new ways of looking at the world. Generative learning will be reached by means of creative tension. The idea of generative learning can be seen as an other formulation of Argyris and Schön's (1978) idea of double loop learning.

The learning organization concept has several strong points which may partly explain its present popularity. One of the major strengths is that the perspective has provided a bridge between theoretical, academic writings on learning and the practice of organizations as perceived by consultants, managers and human resource practitioners. Another strong point which is lacking within most other perspectives is its focus on 'generative learning'. Organizations not only learn in an adaptive manner, organizations also learn more proactively.

2.7 SOCIAL CONSTRUCTIVIST PERSPECTIVE

Characteristic of the social constructivist perspective is its emphasis on practice. Organizational learning cannot be fully understood unless its actual practice is studied in depth. This micro-perspective results in a limited scope of learning. Although most

representative authors explicitly refer to organizational learning, in practice they talk about the learning of small work groups or "communities-of-practice" (e.g. Brown and Duguid 1991, Ciborra and Lanzara 1994, Lave and Wenger 1991, Pentland 1992).

These authors argue that most theories on learning are based on transfer models of knowledge or information. A major problem of these models is their neglect of the social constructivist character of learning. According to the constructivist perspective, what is learned is profoundly connected to the conditions in which it is learned. Consequently, knowledge should not be isolated from practice.

This view on knowledge has its roots in American pragmatism (Dewey 1928, James 1950, Mead 1934). Pragmatism contrasts the traditional ways of defining knowledge. In general, knowledge is approached from a cognitive standpoint or from a 'structural' standpoint (Pentland 1992). The two following approaches are representatives of the classical mind-body distinction (Rorty 1979).

The cognitive or mind approach equates knowledge with abstract representations, and is according to Pentland a natural outgrowth of the traditional information processing model of organizations (Galbraith 1973). It directs attentions to things like perception, sense making, and belief.

The structural or body approach equates knowledge with organizational structures, such as routines (Nelson and Winter 1982). The structural view offers the insight that the capacity to act often depends upon things that are tacit. It directs attention to things like objects, structures and routines (Pentland 1992).

In contrast to these mind or body approaches to knowledge, the social constructivist perspective on learning approaches knowledge as consisting primarily of situated performance. According to Pentland, we should:

*"stop treating knowledge as a static entity that resides somewhere, like in a book or in a library, and start treating knowledge as an active, situated phenomenon.
(Pentland 1992, p. 545) "*

In a similar way, Brown and Duguid (1991) assert that in order to understand learning, it is necessary to focus on the formation and change of the communities in which work takes place. These communities are often unofficial or 'non canonical' and not recognized by the organization. Most significantly, they are emergent: their shape and membership emerge during the course of work practice and learning. Whereas work

practices are often the canonical way in which these communities emerge, learning is most often non canonical. Brown and Duguid argue:

"Attempts to introduce 'teams' and 'work groups' into the workplace to enhance learning or work practice are often based on an assumption that without impetus from above, an organization's members configure themselves as individuals. (...) people work and learn collaboratively and vital interstitial communities are continually being formed and reformed. The reorganization of the workplace into canonical groups can wittingly or unwittingly disrupt these highly functional non canonical - and therefore often invisible - communities. (Brown and Duguid 1991, p. 49).

Pentland (1992) examined how collective performances are accomplished in practice. In his case study, software support hotlines services are implemented to assist customers with technical problems. Individual support specialists often lack the personal resources necessary to respond to a given call. There are several 'organizing moves' available to them in order to resolve customer problems. For example, the call can be given away or they can ask for help by asking a 'quick question'. Efforts to resolve customer problems are in turn constrained by what is socially appropriate and what is physically possible. These practical considerations limit the moves that are available to service workers. Although organizing moves is limited to individual and work-group learning, according to Pentland organizational learning would occur when the moves members make are changing.

Ciborra and Lanzara (1994) assert that one important element of this learning is the possibility of reflecting on these practices in what they call a 'formative context'. Formative contexts are settings within which daily work routines are 'formed' and receive their meaning and scope - for example through organizing moves. Formative contexts are both action and history- based and have a fluid nature.

The social constructivist perspective has at least two positive aspects that are not considered by other authors on organizational learning. First, there is the alternative image of knowledge construction. Whereas organizational learning is mostly conceived of as learning by gathering or acquiring knowledge, this perspective shows that knowledge does not necessarily reside somewhere. Consequently, the perspective forces us to look at

the actual work processes. It is during these day to day activities that learning takes place. Secondly, the perspective introduces the group as a level of analysis. Other perspectives either look at the level of the individual or at the level of the organization.

2.8 CONCLUDING REMARKS

In this chapter, various perspectives on organizational learning have been reviewed. All six perspectives have their own valuable points, as summarized in table 2.1. Arranging the literature into separate perspectives is ultimately an arbitrary endeavor. Therefore, the effort may rightly be accused of pigeon-holing the various studies on learning, while neglecting their variability and uniqueness¹⁹.

Perspectives	Main strengths
Adaptation	Inefficiencies of learning
Incremental Innovation	History matters X
Assumption sharing	Self reflection.
Organizational knowledge	Information processing perspective
Learning organization	Generative learning X
Social constructivist	(Group) learning during actual work-practices

Table 2.1 Main strengths of the six perspectives on organizational learning

Interest in organizational learning that marks the discussions within organization

¹⁹ For instance, the contributions discussed under the heading of the organizational knowledge perspective could have been discussed from an alternative perspective. Duncan and Weiss (1979) focus primarily on the learning process of the dominant coalition as well as on the information flows for building organizational learning. Consequently, it is somewhat arbitrary to position their study within organizational knowledge perspective as it equally suits the 'top level' learning perspective present in some of the literature on 'the learning organization'. The same goes for Jelinek's (1979) study on organizational learning systems since these systems are management tools. More important however, the information which comprise this O.S.T. system is definitely not restricted to the top level.

and management studies of today is predominantly focussed on two of the six perspectives on organizational learning: the assumption sharing perspective, and the learning organization perspective.

The assumption sharing approach has been popular ever since the book of Argyris and Schön on organizational learning was published in 1978. The idea of single loop versus double loop has especially proven to be of value in characterizing the learning process of organizations. The 'learning organization' approach became popular at the end of the eighties, and beginning of the nineties. Its popularity is mainly among practitioners and conspicuously less among academics.

Up until this point, the review is free from any profound critical commentary. My purpose was to provide, as objectively as possible, an overview of the various perspectives on organizational learning that are present within the literature. Such an overview makes it possible to demonstrate what the various contributions are within the literature. Furthermore it implicitly shows where the existing literature falls short and what it falls short of. In order to explain why an alternative approach is needed, chapter three provides a critical review of the received theories.

CHAPTER THREE

A CRITICAL REVIEW

3.1 INTRODUCTION

A plausible approach to use when dealing with the concept of organizational learning would be to exploit one or even a combination of all of the existing contributions that have been discussed in the previous chapter. After all, until the present the various theories have not been scrutinized by thorough critical review. Such an approach however overlooks the various shortcomings from which all the six perspectives suffer. In this chapter these shortcomings, present within the existing literature, will be reviewed in the form of five biases.

The following biases will be identified: a bias towards improvement, a bias towards individual action, a bias towards system thinking, a bias towards planned and strategic learning, and a bias towards one or two-sided learning processes. It will be argued that each of these biases steers the attention unnecessarily in a certain direction. The arguments are based on theoretical and empirical findings which will be treated in this chapter as well as in the rest of the thesis. Table 3.1 provides by way of a matrix a short summary of this chapter.

An identification of biases calls for an introduction of an alternative which is as much as is possible free of any preferences. Surely, this task may be virtually impossible. What I do wish to pursue, is the idea that the existing theory is not complete and unnecessarily tends to be slanted in certain directions. The alternative theory that will be introduced in part two of this thesis is based on more 'balanced' aspects of learning.

	adaptation	innovation	assumption sharing	organizational knowledge	learning organization	social constructivist
improvement bias			X	X	X	
individual action bias		X ²⁰	X	X	X	X
system thinking bias	X		X		X	
planned and strategic learning bias			X	X	X	
one/two sided learning bias	X	X	X	X	X	X

Table 3.1 Biases within the literature set against the six perspectives of organizational learning

3.2 IMPROVEMENT BIAS

There is a tendency within the literature to equate learning with improvement, intelligence, wisdom etc., or what I will refer to as 'successful' learning. This is especially true for the assumption sharing perspective, the organizational knowledge perspective and the learning organization perspective.

Organizations are believed to have learned when their performances have improved. However, learning does not necessarily result in positive outcomes. This becomes clear when we perceive organizational learning as a process instead of as an

²⁰ In general, the incremental innovation perspective is too much focussed on the meso and macro level of learning ignoring the part played by active agency in the course of learning.

outcome²¹.

When organizational learning is studied as a process, the outcome of learning remains one of investigation. To quote March, organizational learning should not be seen as

"following a path of greater and greater elaboration, beauty, civility or fit with the environment. The essential element is not that development leads to higher and higher states but that it inexorably leads somewhere" (March 1990, p. 40)

There are various reasons why learning does not always lead to improvement. Most importantly, organizational behavior is often far from being efficient and effective. Unexpected events, myopic forces, and the confusion of history for example may complicate learning processes (Levinthal and March 1993, March, Sproull and Tamus 1991). In part two and three of this thesis, I will elaborate more thoroughly on these and other aspects that may yield inefficiencies and ineffectiveness as outcomes of learning.

Of course, the outcome of learning also heavily depends on the content of what is learned. Just as learning from watching soap operas will probably not produce perfect wisdom, so too should we be careful in equating organizational learning with improvement. For example, it is hard to acknowledge that the learning about the Mafia necessarily improves society, but it certainly involves a development²².

In part two of this thesis I will elaborate on the process rather than the content of learning as a hindrance for progression. Conditions such as selective perception, miscommunication, too much homogeneity, etc. may all hinder successful outcomes of

²¹ Another reason why most popular contributions link learning with improvement might be due to their optimistic and humane stance. Contributions to 'the learning organizations' and the assumption sharing perspective emphasize a coalition model of organizations. Shared vision is needed as glue to hold people together and give people the feeling of belonging. Shared participation, team building and individual learning are the building stones of the organizations and ascertain a feeling of individual and especially group-responsibility. Aspects of an arena-model of organizations (Strauss 1978) are hard to find. The driving force behind organizational learning is solidarity instead of coercion and luring. Permanence of the organization is assured through processes of self-renewal. In terms of McGregor (1960), these perspectives are based on theory Y: a positive image of the organizational member who wants to put a lot of effort in keeping the organization a learning organization. The notion of a learning organization consisting of a theory X image of organizational members in which the idea that individuals are perceived as egoistic, lazy, and not willing to learn is hardly conceivable.

²² This example also shows that what is considered positive outcomes by one group, for instance by top management, does not necessarily apply to another group, for instance a group of employees.

learning, whether in terms of efficiency and effectiveness.

A process perspective also tones down the idea of radical change as the improved outcome of organizational learning. Many contributions to the theory of organizational learning perceive radical change as superior to incremental change (e.g. Argyris and Schön 1978, Senge 1990, Swieringa and Wierdsma 1990).

However, too much changes produces chaos and instability; the organization is not able to stand still and reflect on its past. In other words, too frequent changes inhibit learning (Lounamaa and March 1987). Next to theoretical considerations, the practice of learning also shows that most changes happen incrementally (Genschell 1997, Nelson and Winter 1982, Rosenberg and Frischtak 1985, Sahal 1981). The idiosyncratic organizational nature, its identity, or the existing organizational knowledge strongly influence what will be learned in the future. In this thesis, the occurrence of path dependency as a result of the history dependent nature of learning, will be considered an important aspect of learning.

In contrast to popular writings on organizational flexibility, strategic change, and organizational transformation, organizations seem to have an inherent bias to be conservative. Various explanations for this conservatism in terms of organizational learning have been given. For example, Senge (1992) argues that this conservatism is due to the inability of organizational members to think in wholes instead of pieces. According to Argyris (1990), difficulties with double loop learning are predominantly the result of the defensive tendency among organizational members to protect themselves from open confrontation and critique. Conservatism as a result of learning can also be explained by a self-referential use of information. What information will be searched for and how it will be interpreted in order to learn from it is largely determined by the organizational identity (Huysman et al 1995).

March and Olsen identify four obstacles to learning (1976). Complete learning is based on the 'complete circle of choice' (March and Olsen 1976) This model assumes that individuals adapt their beliefs to environmental response. The change in beliefs or frames of references lead to a change in individual action and will yield in turn a change in organizational action which corresponds to the response of the environment. In practice however, the 'rational' circle is often broken at one or more points. Incomplete learning frequently leads to reinforcement of existing routines and consequently to the

reinforcement of the general frame of reference, ideologies, or belief systems. Even when the existing routines are inferior, organizations continue to improve their competencies within these procedures or technologies. This competency trap increases the likelihood of persistence in inferior or outdated procedures.

As will be asserted in part two and three of this thesis, viewing organizational learning from a process perspective reveals these and other problems and hindrances and enables us to identify learning conditions which may produce more successful outcomes.

3.3 INDIVIDUAL ACTION BIAS

Although organizational learning has been studied both from a micro as well as a macro approach, many organization theorists treat organizational learning at the level of individuals and groups. They stress the individual action part of learning, neglecting more structural considerations such as routines or performance programs. In fact, only some 'innovation' theorists (e.g. Nelson and Winter 1982) and some of the contributors to the adaptation perspective (e.g. Cyert and March 1963) emphasize these structural considerations. These efforts in turn however, tend to neglect the action part of the story.

The failure to distinguish between individuals and organizations as levels of analysis is not only present in the discussion concerning organizational learning. Within the general organizational literature, a theoretical pluralism exists concerning the interplay between what Dawe (1970) refers to as "the two sociologies": one views individual action as the derivative of the social system (such as structuralism and functionalism) and the other views the social system as the derivative of individual action (such as the interpretative sociologies). The "system argument" starts analysis with the organization as a whole and locates individual action according to its place and function within the system. The "individual argument" on the other hand begins with the individual and proceeds to find the system only as the aggregated outcome of individual acts.

The structure/action debate can also be perceived as a deterministic/voluntaristic debate. Seen from the voluntaristic orientation, individuals and their created institutions are autonomous, proactive, self-directing agents; individuals are seen as the basic unit of analysis and source of change in organizational life. The deterministic orientation focusses not on individuals, but on the structural properties of the context within which action

unfolds, and individual behavior is seen as determined by and reacting to structural constraints. These constraints provide organizational life with an overall stability and control (Astley and Van de Ven 1983).

For a long time, organizational theory has been dominated by a structural-functional paradigm²³ that emphasizes the deterministic orientation. This paradigm is used here to refer to a broad range of positivist schools. In emphasizing structures, structural-functionalists treat social phenomena as social facts, that is as concrete, materialistic entities. Social reality exists "out there", external to the individual, and it takes form prior to any human activity. Hence, these social facts impose on and shape the behavior of individuals. Likewise, viewed from a structuralist-functionalist perspective, individuals are products of their environment. Individuals respond rather passively to external stimuli. For these theorists, the primary unit of analysis is the organizational entity; its social, psychological, and economic characteristics become static properties rather than social processes (Putnam and Pacanowsky 1983).

A major shortcoming of the structural-functionalist perspective when dealing with organizational learning is its neglect of the active behavior of individual members, or "agents" (Giddens 1984). The organization learns but the link between this learning and the behavior of the individuals 'within' the organization remains obscure.

Under the influence of interpretive sociology (Schutz 1971), the interpretive perspective as representative of the voluntaristic orientation, emerged as an important alternative organizational paradigm. In this perspective social reality is portrayed as symbolic processes - created through ongoing actions and through meanings attributed to these actions. Whereas the structural-functionalist perspective - with the contingency theory as one of the prominent representatives in organization theory - views organizational structure as a static system of normative and/or behavioral relations - the interpretive perspective views structure as process. Proponents of this conception are Weick's *social psychology of organizing* (1979), Silverman's (1970) *action theory* and Goffman's *symbolic interactionism* (1983).

²³ When using the words "structural-functionalist perspective" I refer to a combination of structuralism and functionalism. Structuralism deals predominantly with macro-level phenomenon and neglect micro phenomenon. Functionalism sees phenomena as parts with a function for a larger whole. Although the two have separate characteristics, they are often used in combination.

A major shortcoming of the interpretive perspective is the notion that structure is an emergent property of ongoing action. This idea suggests that action unfolds free of any preconceptions, and it underestimates the degree to which institutional patterns impose prior constraints on the action from which structures emerge (Weick 1990).

A serious problem arises when these different schools of thought focus on only one side of the issue and use such different logic and vocabularies that they do not speak to each other directly (Astley and Van de Ven 1983). This problem can be reduced by perceiving them as dualities rather than mutually exclusive pairs. In this way, organizational processes are not seen as voluntaristic bottom up processes alone, nor as complete deterministic top down structural processes either.

In a similar way, organizational learning is perceived in this thesis as taking place through the action of individuals when these actions are simultaneously constrained by institutional forces.

Although organizational learning is influenced by the activities of active agents, it is at the same time a top down process. Organizational history, assimilated in organizational memory, structures the activities of these learning agents. Thus, individual learning is not free from any preconception. Institutional patterns such as organizational norms and values, but also environmental rules and beliefs impose prior constraints on the actions of agents. As a result, the learning within organizations is often conservative.

Because of this dual character between on the one hand the voluntaristic actions of individuals - 'active agents' - and on the other hand the deterministic force of existing organizational structures - 'structural properties' - organizational learning can be seen as a process of structuration (Giddens 1976, 1979, 1984) or institutionalization (Berger and Luckman 1966, Schutz 1971).

Although the 'Structuration theory' of Giddens provides an interesting perspective on this reciprocal nature of social phenomena, I prefer the use of the concept of institutionalization as approached by Berger and Luckman in their "*Social Construction of Reality*" (1966). Unlike Giddens, these authors focus explicitly on the (re)construction of knowledge and how this (re)constructed knowledge influences and is influenced by subsequent (re)constructions.

Furthermore, a shortcoming of the Structuration Theory is that it is predominantly

centered on the level of individual action as well as (societal) structure, overlooking intermediate levels such as in the case of organizations, the level of the group. Groups play an important role in facilitating as well as discouraging processes of structuration. Most often, individual action can only make a difference when this action is supported by a group. For example, as symbolic interactionists - among whom Berger and Luckman (1966) can be considered - have demonstrated, reference groups are influential intermediaries between individual action and structural properties. They filter individual beliefs and action by defining what is appropriate and what is not. Besides cognitive support, groups are also vital in providing (political) support to individuals. During the process of innovation for example, innovation champions need the support of a group of loyal followers in order to make their efforts successful (Kanter 1983).

Analyzing organizational learning as a reciprocal process creates awareness that the process cannot be considered as an entirely voluntaristic process in which (purposeful) individual (inter)action will lead to a change in the organizational memory or knowledge. Individual learning agents are also constrained by structural properties in their learning behavior. Furthermore, these individual actions have unintended and unknown consequences. This reciprocal character of learning will be discussed more theoretically in chapter four when the core process of learning: "Internal learning" is treated.

3.4 SYSTEMS THEORY BIAS

Most, if not all theories on learning are based on some translation of system theory. The organization adapts to changes in the environment (Cyert and March 1963), to responses to organizational action (March and Olsen 1976, Argyris and Schön 1978), or organizations are part of broader system of organizations that are all connected to each other; learning means not thinking in pieces but thinking in wholes (Senge 1992).

In general, organizational learning is perceived as a way to correct errors and to adapt to environmental demands. Organizations need to learn in order to adapt successfully to environmental changes. The greater the uncertainty in the environment, the greater the need for learning. Feedback information and information from external environments are the keys to successful learning. In short, organizational learning is mostly approached as an externally driven phenomenon.

As a result of this predominance of system thinking, other aspects of learning are neglected. The trigger to learning may also be internally driven, in which case the system thinking paradigm becomes less relevant. Organizations also learn for example from organizational participants. This 'internal learning' has nothing to do with a need to adapt to changing environments, or other forms of system thinking. Furthermore, organizations may learn as a result of the need for managers to make a difference, or the almost inherent drive of innovation champions to seek adventure. In a review of 'some of the literature on organizational learning', Dodgson (1993b) for example observes that:

"(o)rganizations, and the forms of collective and individual learning within them, importantly affect learning processes and outcomes. Indeed, the role of human agency and individual goals such as the drive for self-actualization are almost completely ignored in many accounts on organizational adaptability. Organizational learning is stimulated both by environmental changes and internal factors in a complex and iterative manner" (Dodgson 1993b, p. 387).

As the two case stories presented in part two of this thesis illustrate, learning may also result from unanticipated events which, again, a systems theoretical perspective would tend to ignore. In section 3.6 I will return to this aspect of chance during learning.

I propose a wider scope of learning processes which allows for a broader range of organizational learning triggers. In part two of this thesis a typology of organizational learning is presented consisting of four mutually dependent types of learning. Although these types of learning heavily overlap, they are conceptually distinct enough to treat them separately. These four types of learning are internal learning, feedback learning, learning from others and creative learning.

Internal learning consists of learning from existing knowledge within the organization. A contemporary example of a planned way for internal learning is knowledge management. Feedback learning deals with learning from experience through the reactions of the environment. By focussing on adaptation, feedback learning is one of the most generally accepted ways of learning within the literature. Learning from others concerns learning from the experience of other organizations. It deals with (mutual) imitation and can have a very subtle nature. Creative learning involves the creation of

knowledge and can often include experimenting. This type of learning deals with an internally triggered introduction of variety in organizational knowledge.

Of all these four types of learning, feedback learning corresponds the most to the systems theoretical explanation of organizational learning. In short, during feedback learning organizations learn from their experience as a result of feedback information derived from the environment. Other forms of learning are less driven by environmental demands. This is certainly true for internal learning and creative learning. Both involve an internally driven form of learning which is in the case of creative learning, often triggered by chance, serendipity, cross-fertilization, and the individual drive for self-actualization.

3.5 PLANNED AND STRATEGIC LEARNING BIAS

Except for some contributions within the adaptation and the incremental innovation perspective, many researchers portray organizational learning as an activity than can be planned for. For example, Argyris (1990) argues that, in order to radically change basic assumptions, defensive routines can be brought to the surface when open communication sessions are organized. These organizational development tools can be designed beforehand and could be used in various situations. In line with Gregory Bateson (1973) the author refers to so called 'deutero learning' (second order learning) when dealing with the institutionalization of these learning processes. Institutionalized processes of learning can be found for example in research and development departments and planning and marketing departments (McKee 1992).

Planned learning has also been a subject within the organizational knowledge perspective. In general, authors within this perspective assert that information systems can be build to support this deutero or institutionalized learning. As described in the previous chapter, Jelinek (1979) as well as Shrivastava (1983) have analyzed organizational learning systems that capture the information that organizations need to learn from the environment.

The 'Learning Organization' perspective focusses mostly explicitly on planned and strategic learning. Writers who make use of this perspective assume that organizations can anticipate future learning behavior. And if learning can be anticipated, learning can also be used for strategic purposes, such as gaining a competitive advantage. Organizational learning is seen as a strategic activity, by which the ability to learn is considered an

important, even unique source of lasting competitive advantage (e.g. Burgelman 1990, De Geus 1988, Senge 1990, 1992, Stalk et al 1992, Stata 1989). Given the increasingly demanding environments, radical change is more desirable since it fosters progression, innovation and change. As such, organizations can cope with the ever changing environment. For example, the concept of "generative" learning introduced by Senge (1990) occurs within "an organization that is continually expanding its capacity to create its future" (1990, p.14).

Learning organizations are 'built' in order to promote learning. Various design criteria have been introduced that could foster organizational learning. It is argued that whenever managers take these 'guidelines' into account, organizations will turn into more efficient learning centers. In other words, organizations can anticipate their future learning behavior.

The downside of all these optimistic contributions is that they tend to overlook the more accidental and path dependent nature of organizational learning.

In the coming chapters I will discuss the power of history which can cause conservative learning behavior. As a result of such forces, individual members or, specifically managers, are not able to fully engineer the future (March 1990). Next to this rule-following learning behavior, organizations are often confronted with internal as well as external unanticipated events. These events limit the possibility of -strategic- planning and deuterio learning. Indeed, as the two case stories discussed in part II reveal, unsystematic and unintentional learning is one of the common ways in which organizations construct their knowledge.

The stochastic nature of knowledge construction has become accepted within the literature of strategy formation (Mintzberg 1988, Quinn 1989, Vissers 1994). Quinn (1989) for instance recommends 'logical incrementalism' thereby recognizing the cognitive and process limits that constrain formal strategic practices. Such a process of strategy formation allows for a continuous evolving process. Mintzberg and Waters (1985) propose a continuum ranging from 'pure deliberate' to 'pure emergent' strategies. Emergent strategy acknowledges the possibility of unplanned action; patterns develop in the absence of intentions. Thus action can take place without previous thinking, courses of action called 'strategy' - in retrospect - may not be based on previous plans. It is just a small

step towards acknowledging this rather unplanned nature of knowledge construction in cases of organizational learning.

Several contributions within the adaptation and incremental innovation perspective on organizational learning do indeed refer to the possibility of unanticipated learning (e.g. March 1990, March and Olsen 1976, Pennings 1992, Sahal 1981). March (1990) for example talks about a 'meandering' evolution thereby referring to the unplanned unanticipated traces that learning process can leave behind. Organizations face various problems and unforeseen events when learning.

"There are irreversible branches, thus path-dependence and decisive minor moments. The branch-points, involving things like mutations, mating, communication contacts, and fortuitous opportunities often seem almost chance like in their resolution, yet decisive in their effects on subsequent history. Though the path of developments is explicable in terms of a comprehensible process, the realized course of natural evolution is difficult to predict."
(March 1990, p. 44).

Because the course of the evolution depends upon the sequence of particular branches that are realized along the way, organizational learning processes are not easily predicted - with obvious implications for strategic planning processes (Huysman et al 1994).

3.6 ONE OR TWO-SIDED LEARNING BIAS

Although it has often been argued that learning can be studied from various angles (e.g. Dodgson 1993b, Easterby-Smith 1996), learning is less frequently seen as a multi-sided phenomenon. There is literature that focusses only on one side of learning, for example the learning within organizations or the learning during innovation. But besides emphasizing one particular type of learning, it has become a very standard endeavor for researchers to approach organizational learning as a two-sided phenomenon (see table 3.2).

single loop vs. double loop	Argyris and Schön (1978)
exploitation vs exploration	March (1991)
adaptive learning vs generative learning	Senge (1990)
momentum vs revolution	Miller and Friesen (1980)
lower level learning vs. higher level learning	Fiol and Lyles (1985)
reactive vs proactive learning	Miles and Randolph (1980)

Table 3.2 Organizational learning as a two-sided phenomenon

Perhaps the most common dichotomy is that of single loop versus double loop learning (Argyris and Schön 1978) originating from cybernetics. Single loop learning is concerned with controlling existing systems. Double loop learning questions the norms; deviations from the norm will lead to a possible change of the norm.

March (1991) also draws a distinction between two organizational learning processes, though without referring to pure system thinking. He uses the dichotomy of "exploiting old certainties" versus "exploring new possibilities". Exploitation produces reliable knowledge; exploration produces variety in knowledge.

Senge (1990) refers to the dichotomy between adaptive versus generative learning. Whereas the first deals with learning by conforming to changing environments, the latter refers to learning that produces pro-active behavior.

Fiol and Lyles (1985) make a distinction between 'lower level learning' and the first process 'higher level learning'. Lower level learning pertains to changing behavior while higher level learning deals with changing cognitions.

A more integrative perspective of organizational learning presented in this thesis introduces organizational learning as a many-sided phenomenon consisting of four mutually inclusive and dependent types of learning. Such an approach departs from the tradition of approaching learning as a two-sided phenomenon, in three related ways:

- 1) it does not assign a value to the various types of learning;
- 2) it approaches the various types of learning as continuous and as being positioned along a continuum ranging from learning of things already known to learning of things not yet known;
- 3) it argues that processes of organizational learning should incorporate elements of various types of learning. As a result, promoting organizational learning processes within organizations requires a balancing of various types of learning.

Many contributions to organizational learning consider 'higher level learning' as superior to 'lower level learning', 'single loop learning' to 'double loop learning' and 'adaptive learning' to 'generative learning'. The distinction offered in this thesis does not assign a value to one or another form of learning.

All types of learning may have their own value depending on the purpose of learning. Organizations engage in internal learning for example in order to become more knowledgeable about their dispersed experiences. Organizations learn from feedback information as well as learning from the reactions of the environment. Organizations learn from others for example because they do not have the expertise at home. Finally, creative learning has its own value in creating new knowledge.

All four types of learning are of comparable importance. This observation has significant implications that will be discussed more thoroughly in chapter eight.

Instead of dividing the various forms of learning into a dichotomy, I propose the use of a continuum, ranging from learning of things already known to learning of things not yet known. Thus, the organizational learning-dimension as shown in figure 3.1. represents the degree of novelty or originality of knowledge that is introduced in learning.

Along this continuum "internal learning", "feedback learning", "learning from others", and "creative learning" are positioned. A continuum to position the various learning types is considered as more appropriate than a discontinuity such as a two-sided approach, as there is no clear boundary between the various types of learning.

Figure 3.2 illustrates how the various forms of learning are related to increasing the depth versus breadth of organizational knowledge. It should be noted that this

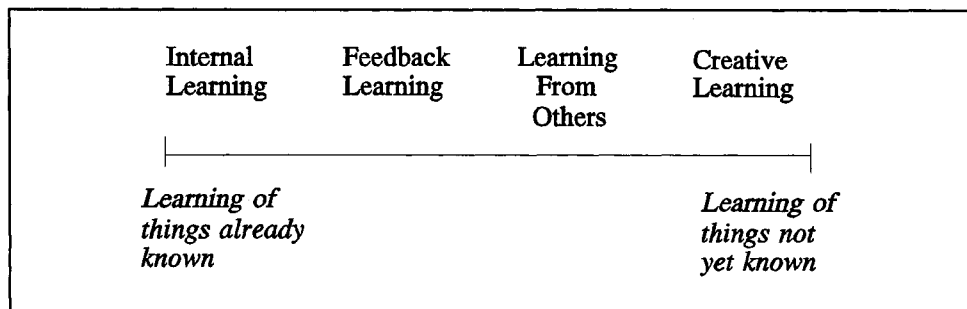


Figure 3.1 An organizational learning continuum

representation is ideal-typically. For example, the outcome of organizational learning processes heavily depends on the effectiveness of learning processes. As will be argued in later chapters, organizations tend to learn in a rather conservative way. This is also why the depth of organizational knowledge as an outcome of organizational learning is represented as occurring more frequently than an increase in breadth of organizational knowledge as an outcome.

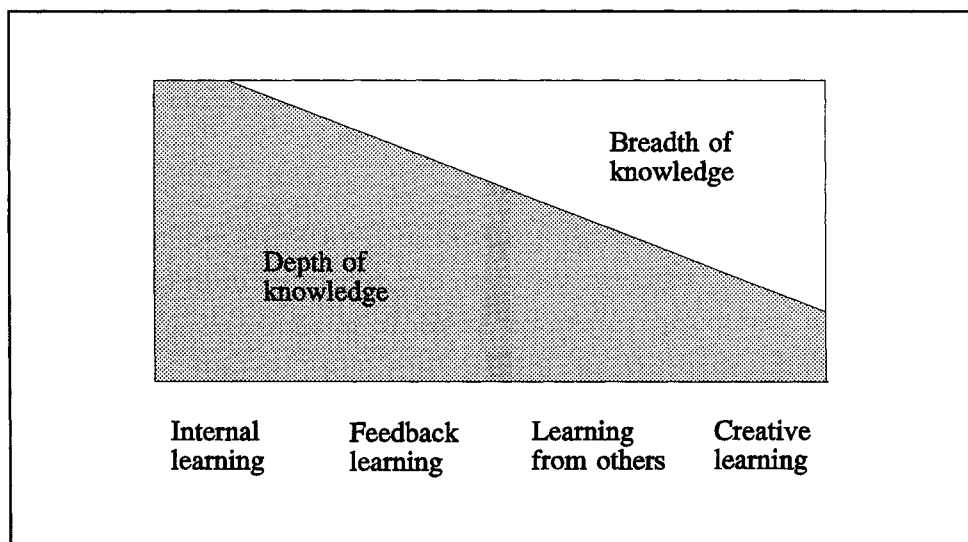


Figure 3.2 Typology of learning in relation to the depth vs. breadth of organizational knowledge

Of all forms of learning, the outcome of internal learning is likely to be the most conservative. In other words, internal learning involves increasing the depth of knowledge. Occasionally, internal learning may lead to an increase in the breadth of organizational knowledge. For example, during day to day work practices, innovative - as opposed to improved - ways of doing can be learned which may become externalized and objectified into organizational knowledge (Brown and Duguid 1991).

Feedback learning may involve the increase of both the depth and breadth of knowledge but is likely to be more of the first than of the latter type. This is mainly because feedback information is a reaction of organizational action and as such does not depart considerably from existing organizational knowledge.

Learning from others also involves the increase of both depth and breadth of knowledge but is likely to be more of the second type since the diffusion of inter-organizational knowledge will bring about a variety of existing organizational knowledge. Creative learning is a way of learning that is most focussed on increasing the breadth of knowledge. Of course, creative learning does not always result in an introduction of variety in organizational knowledge. The case story about creative learning that will be presented in chapter seven illustrates for example that no change in organizational knowledge occurred, although the organization explored an innovative idea for more than four years.

A final reason why this integrated approach differs from the existing literature is that the various types of learning are believed to be overlapping and mutually dependent.

Although the four types of learning should not be approached as discontinuous processes, I will treat them in part two of this thesis as distinct categories. This is done to provide conceptual clarity. In practice, a focus on only one single type of learning may have important negative tendencies.

I will argue that every type of learning should incorporate other types of learning in order to overcome path dependency. This notion resembles a well-known thought of Chinese philosophy, and in specific the idea that something would become its opposite when allowed to develop to its extremes. In order to promote its development without such negative tendencies, it must include elements of its opposite (Fung 1952).

Relating this notion to the present discussion of organizational learning implies that all four types, although not being each other's opposite, should incorporate elements of

other forms of learning as to avoid extremity. For example, organizations which learn from other organizations should create room for feedback learning, internal learning and creative learning.

This idea has important implications for organizational practitioners who want to promote successful outcomes of learning. The idea of balancing learning processes will be discussed thoroughly in chapter eight.

3.7 CONCLUDING REMARKS

In chapter two, existing literature on organizational learning was reviewed by categorizing the contributions into five different perspectives. It was argued that organizational learning is predominantly viewed from one - or sometimes a combination of two - perspective(s). While reviewing these six viewpoints on organizational learning, it was concluded that they all have their own valuable points.

An alternative perspective could have been proposed by simply connecting the six perspectives into one integrated theory. However, in this present chapter, it is argued that the existing literature has also various important weaknesses. Five biases have been identified which are to a greater or lesser extent present within the six perspectives. They involve a bias towards improvement as outcomes of learning, a bias towards the individual as learning unit, a bias towards system thinking as framework to analyze learning, a bias towards planned and strategic learning, and a bias towards focussing on only one or two types of learning.

Table 3.3 integrates the conclusions derived from chapter two and three.

	Main strengths	Main weaknesses
Adaptation	Inefficiencies of learning	system thinking, one or two sided learning bias.
Innovation	History matters	"structure bias", one or two sided learning bias.
Assumption sharing	Self reflection	improvement bias, individual learning, planned learning bias, one or two sided learning bias.
Organizational knowledge	Information processing perspective	improvement bias, individual learning, system thinking, planned learning bias, one or two sided learning bias.
Learning organization	Generative learning	improvement bias, individual learning, system thinking, planned learning bias, one or two sided learning bias.
Social constructivist	Learning at actual work-practices	individual learning, one or two sided learning bias.

Table 3.3 Strength and weaknesses of the perspectives on organizational learning

In the four subsequent chapters, I will try to challenge the five biases by:

- 1) providing a process perspective of organizational learning through a focus on the way learning as a process takes place. The outcome of learning heavily depends on the process of knowledge construction. In particular, the occurrence of desired or successful outcomes of learning depends on the way organizations cope with the many identified hindrances to learning as well as on the effort to balance the various forms of learning. An awareness of the possible occurrence of these learning-problems may increase the chance of 'successful'²⁴ outcomes of learning;
- 2) embracing the idea of reciprocity between individual action and organizational structure by acknowledging that organizations learn from individuals while this learning is influenced by the fact that individuals also learn from organizations. Briefly, the idea of externalization, objectivation, and internalization knowledge, taken from Berger and Luckmann (1966) forms the standard type of all possible types of learning and will be discussed in chapter four;
- 3) thwarting the system-thinking bias by showing that organizations do not only learn by reacting to knowledge as input in a feedback loop. Rather, there are various learning triggers, such as the will to imitate, the drive of individual actors to 'actualize' themselves or the occurrence of chance events. Feedback learning is only one possible form of learning;
- 4) emphasizing the power of the organizational past and the occurrence of unanticipated events which may thwart the planned and strategic learning-bias. In practice, revolutionary changes reflected in concepts such as "higher level learning" (Fiol and Lyles 1985) or "double loop learning" (Argyris and Schön 1978) are pretty rare, and are often an end result of many small changes. Organizations cannot just throw away old experience and begin over and over again. The process towards revolution is often one of evolution. In addition, organizational learning is often accidental. Internal and external unanticipated

²⁴ Successful learning refers to learning-processes that are not obstructed by the various identified problems of learning.

events complicate the planning of learning.

- 5) focussing on four conceptually distinct types of learning instead of only one or two as is usually the case in the literature on organizational learning. Learning is considered here as consisting of four different processes that are mutually dependent. Depending on the situation, one or more types of learning may be of more relevance. For example, in case the organization tries to learn from its organizational members, internal learning dominates. In case the organization imitates other organizations, learning from others is of great relevance. As will be argued in chapter eight, too much emphasis on one of the four types of learning will produce however path dependency. Furthermore, integrating elements of other types of learning may contribute to the effectiveness of a particular type of learning.

PART TWO

A TYPOLOGY OF ORGANIZATIONAL LEARNING

In the coming chapters an alternative perspective on organizational learning is introduced. The aim is to provide a theoretical foundation to the concept of organizational learning. I believe this is necessary since the concept still lacks a clear theoretical basis. This theoretical exercise will be used in the final part of the thesis to reveal more concrete implications in practice.

This part of the thesis integrates the different perspectives on organizational learning as discussed in chapter two and challenges the five biases that have been identified in the chapter three.

Four types of organizational learning processes are described in separate chapters: internal learning, feedback learning, learning from others, and creative learning. This typology reflects the possible ways in which organizations learn. More than just an identification of various learning processes, the four types of learning are mutually dependent. Too much focus on one of the types of learning may produce negative consequences. Consequently, no type of learning is superior to other types of learning. Hence, although creative learning is last in the row of learning-forms, its importance is comparable to that of the other types of learning. This assumption is a substantial aspect of the alternative perspective that is proposed in this thesis.

Although this idea of integrating the four types of learning forms part of the theoretical arguments, it can at the same time be considered implications for organizational practitioners who seek to produce successful outcomes of learning. Hence, I will elaborate on this issue of integration when discussing the possibilities of improving the organizational learning capacity in chapter eight.

By presenting a typology of learning, I integrate the various perspectives on organizational learning that exist within the literature, as discussed in chapter two (see table 4.1). Internal learning corresponds to the social constructivist perspective in that both emphasize the social construction of organizations and the internal dynamics of learning. It also borrows ideas of the organizational knowledge perspective by focussing

on the process of organizational knowledge construction. Feedback learning corresponds to the adaption perspective in its emphasis on adapting to environmental responses. It also corresponds to the assumption sharing perspective for its reliance on system-based thinking and in specific on the detection and correction of errors. Learning from others corresponds with the innovation perspective. Both address the diffusion of external knowledge. Creative learning resembles the 'learning organization' school in that both emphasize the importance of generating new knowledge.

Typology of learning		Related perspectives
<i>Internal learning</i>	<i>Learning from its members and the members from the organization.</i>	organizational knowledge: <i>constructing knowledge.</i> social constructivist: <i>situated learning</i>
<i>Feedback learning</i>	<i>Learning from environmental reactions</i>	adaptation: <i>adapting to the environment</i> assumption sharing: <i>detecting and correcting errors</i>
<i>Learning from others</i>	<i>Learning from experience of other organizations</i>	incremental innovation: <i>external knowledge diffusion</i>
<i>Creative learning</i>	<i>Learning through experimenting</i>	the learning organization: <i>the creation of new knowledge</i>

Table 4.1 *The origins of the four types of learning*

Every chapter starts with a theoretical introduction followed by a discussion of the possible traps and obstacles that organizations may encounter while learning. It is argued that 'successful' outcomes of learning may be reached when these traps and obstacles are taken into account as well as when organizations engage in balancing the various types of learning. In chapter eight, while discussing the implications for organizational practitioners, this need for balancing learning is addressed.

CHAPTER FOUR

INTERNAL LEARNING

4.1 INTRODUCTION

In this first theoretical chapter of part two, processes that can be described as 'internal learning processes' are discussed. Internal learning is considered here as the basic or elementary form of all organizational learning processes. It deals with the processes during which the organization learns from its members as well as the processes during which members learn from the organization. As such, during internal learning, organizations act as closed systems. In the course of the discussion in subsequent chapters, this basic model of learning will be further elaborated in order to satisfy more complex learning phenomena.

The chapter is conceived as follows: I will first describe what this concept entails. Thereafter, I will approach internal learning as a process of institutionalization. This process will be unfolded by distinguishing between externalization of individual knowledge, objectivation and internalization of organizational knowledge. Subsequently, I will discuss some of the traps and obstacles that are distinctive for internal learning and that may complicate internal learning and organizational learning in general.

4.2 THE CONCEPT OF ORGANIZATIONAL KNOWLEDGE

Organizational knowledge refers to knowledge which an individual uses when acting as an organizational participant. Much has been published about the concept of organizational knowledge, although there still seems to be confusion about its meaning.

1. First, organizational knowledge may be seen as residing in formal descriptions of the organization and its activities or in the retained records of organizational activity. This type of organizational knowledge consists of formal knowledge about the organization and may be viewed as analogous to the contents of an organizational knowledge base. Examples of such formal organizational knowledge are the formal record of organizational activity held in minutes of meetings, company reports, organizational mission statements, financial information used in management accounting systems, organizational charts, etc.

} group/
explicit

2. Rather than knowledge *about* the organization, organizational knowledge can also be considered knowledge *of* the organization. Morgan (1986) for example discusses this viewpoint when dealing with the image of a brain. Together with Ramirez (1983), he talks of organizations as holographic systems in which organizational knowledge may be embedded in their every component. With the growing popularity of organizational learning, this idea of an 'organizational memory' has become subject of increased interest (Sandelands and Stablein 1987, Stein 1995, Stein and Zwass 1995, Walsh & Ungson 3. 1991). The concept is somewhat similar to the sociological conception of a collective mind which as a construct evolved from the work of Durkheim at the end of the nineteenth century. However, whereas collective mind refers to shared understanding and shared interpretation, organizational memory does not necessarily achieve the same end. Current literature on the topic has a rather functional perspective on organizational memory (Stein and Zwass 1995). The operationalization of the concept is restricted to organizational memory that allows for acquisition, retention, maintenance, search and retrieval of information, leaving less structured organizational knowledge untouched. Organizational war stories, dress codes, informal rules and routines, etc. cannot easily be collected, retained and retrieved. Not only is most of this organizational knowledge tacit (Polanyi 1958), they are often not free of subjective interpretation and political bias (Orr 1990). The concept of "organizational routines" (Levitt and March 1988, Nelson and Winter 1982) provides a possible solution to this problem of a too formal image of knowledge. In other words:

"The generic term "routines" includes the forms, rules, procedures, conventions, strategies, and technologies around which organizations are constructed and through which they operate. It also includes the structures of beliefs, frameworks, paradigms, codes, cultures, and knowledge that buttress, elaborate, and contradict the formal routines. Routines are independent of the individual actor who execute them and are capable of surviving considerable turnover in individual actors." (Levitt and March 1988, p. 320)

Given that routines may be considered as restricted to tradition, customs and habit, I prefer the use of the general concept of "organizational knowledge" thereby referring to both formal and less formalized aspects of knowledge.

4.3 THE PROCESS OF INSTITUTIONALIZING KNOWLEDGE²⁵

Internal learning can be perceived in terms of the process of institutionalization. The essence of organizational learning is the construction of organizational knowledge such as organizational norms, procedures, technologies, gossip, etc. Through communication, individual knowledge may become collective (organizational) knowledge while this accumulated knowledge will in turn influence subsequent action.

Given that all forms of learning that will be described in this thesis mutually depend on each other, this process of institutionalization, although particularly relevant to internal learning, also applies to other forms of learning.

The term 'institutions' is used to describe social practices that are regularly and continuously repeated, are sanctioned and maintained by social norms, and have a major significance in the social structure²⁶. Institutionalization is the process whereby social practices become sufficiently regular and continuous as to be described as institutions. The concept is widely used in sociology, though often without precise specification²⁷.

Scott (1987) distinguishes different 'institutional schools'²⁸. Institutionalization can be conceived of as 'a process of instilling value'. Selznick for example argues that "institutionalization is to infuse with value beyond the technical requirement of the task at hand" (Selznick, 1957, p 17) which may lead to an unplanned and unintended nature of institutions.

²⁵ Until so far I have used the words knowledge and information interchangeably. However, as many writers have tried to point out, the two concepts are not the same. It is impossible here to review all uses of the two concepts, though some words are needed.

In general, information is about facts and symbols and can be communicated or transferred without the necessary mediation of individuals whereas knowledge is more about know-how and cannot be uncoupled from human beings. Von Hippel perceives know how as "the accumulated practical skill or expertise that allows one to do something smoothly and efficiently" (Von Hippel, 1988). The importance of this definition lies in the word "accumulated". Know how must be learned while information can be obtained. This means that knowledge as know how is of more significance than information during the process of (organizational) learning.

²⁶ This description of the concept 'institutions' is obtained from the Dictionary of Sociology, N. Abercrombie e.a., Penguin Books second edition, 1988

²⁷ Different schools of sociology treat the concept of institutionalization in different ways. For example, functionalists tend to see institutions as fulfilling the 'needs' of individuals or society (e.g. Durkheim 1978, Parsons 1960) while phenomenologists may concentrate on the way in which people create or adapt institutions rather than merely respond to them (Berger and Luckman 1966, Schutz 1971).

²⁸ In fact, Scott (1987) distinguishes four schools: two dealing with the process of institutionalization and two with institutions as systems. I restrict this discussion to the process aspect of the theory.

Institutionalization can also be conceived of as 'a process of creating reality'. Social order is founded on a shared social reality, which is created by social interaction.

When dealing with the process in which individual knowledge becomes organizational knowledge, I refer to the latter formulation offered by Scott (1987). When dealing with the process in which individuals make use of the organizational knowledge in order to act as an organizational member, I refer to his first formulation.

Berger and Luckman refer to three phases or "moments" that can be distinguished in the process of institutionalization: "externalization, objectivation, and internalization" (Berger and Luckmann 1966). Externalization is the process in which personal knowledge is communicated to others. Through externalization, "society becomes a human product".

Objectivation is the process during which "society becomes an objective reality". Durkheim (1964) considers these objectified behavior patterns as "things".

During the moment of internalization, "the objectified social world is retrojected into consciousness in the course of socialization" of the individual. "Through internalization man becomes a product of society" (Berger and Luckman 1966 p. 79).

As such, the authors refer to a dialectical relation between action and structure:

"The relationship between man, the producer, and the social world, his product, is and remains a dialectical one. That is, man (not, of course, in isolation but in his collectivities) and his social world interact with each other. The product acts back upon the producer." (Berger and Luckman 1966, p. 78).

The "moments" of Berger and Luckman correspond to a certain extent to Giddens' structuration theory (1976, 1979, 1984).

Giddens is one of the most well-known contemporary sociologists who proposes a dialectical relationship between action and structure. Action and structure pre-suppose each other, instead of being mutually exclusive. Giddens is more explicit than Berger and Luckmann about the possible occurrence of consequences of human action that are unknown or unintended.

Figure 4.1 depicts in a highly simplistic form this institutionalization process when related to organizational learning.

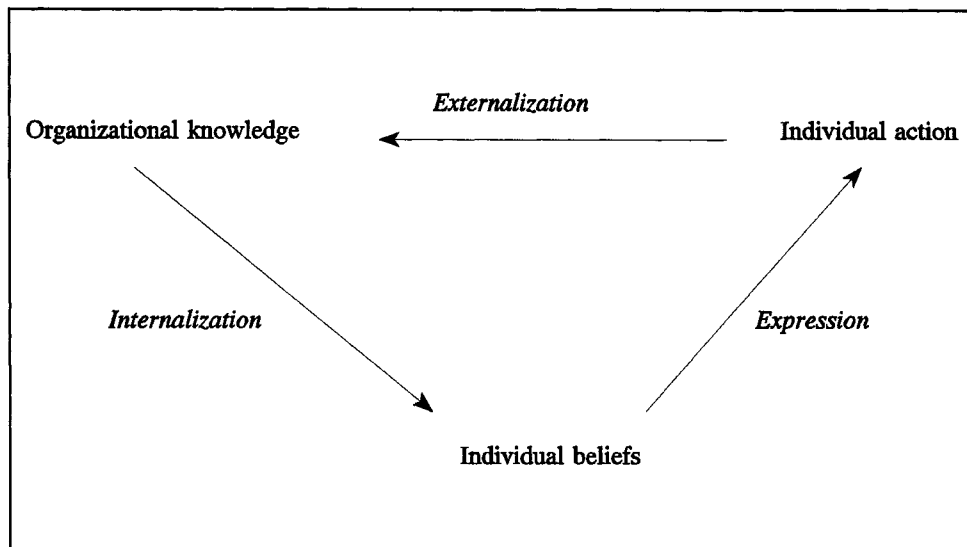


Figure 4.1 Internal learning as a process of institutionalization

Individual action involves the behavior of individuals and may also include expressed beliefs. Although I refer to the individual, these individual actions do not exclude collective action such as group action.

Organizational knowledge refers to formal and informal organizational aspects such as organizational paradigms, technologies, procedures, norms, values, strategies etc, as described in chapter one. The use of this knowledge assures organizational action. Thus, whenever speaking of organizational action, I refer to individuals making use of organizational knowledge while acting or thinking.

Organizational knowledge in turn influences the individual beliefs through the process of internalization. With individual beliefs I refer to individual theories regarding the way of acting and thinking. Individual beliefs are the unexpressed attitudes and opinions²⁹. Again, although referring to the individual, shared understandings and shared

²⁹ There is much ambiguity around concepts such as individual attitudes, individual opinion, individual ideology, etc. Attitudes are treated here as more or less well organized systems of ideas, which are affect laden and may have direct implications for action.

beliefs are not excluded³⁰. It is crucial that these beliefs belong to the individual or group of individuals and are not necessarily part of the organizational knowledge.

Together, individual beliefs and action form 'individual knowledge'.

Organizational knowledge is of course not the only source that influences this individual knowledge. Personal experiences such as (previous) work experience, education, cultural background etc. are all important influential forces which create unique individuals and as such are important sources of variance.

Externalization occurs when individual knowledge is shared among individuals. When this externalization results in organizational knowledge, I refer to objectivation. The process of internalization occurs when individual actors integrate this organizational knowledge into their personal beliefs. Finally, expression is the process through which individual beliefs are put into practice. Given that this latter process mainly deals with individual learning, I will restrict the following discussion to the first three processes in relation to organizational learning.

4.3.1 Externalization of individual knowledge

Through communication, individual knowledge can be externalized. In the words of Berger and Luckmann (1966), through externalization, the organization becomes a human product.

With the growth of knowledge-workers and the increase of worker-mobility, organizations and managers in particular increasingly feel the need to be continuously informed about the knowledge that is present within the organization. This issue is of special importance within 'knowledge intensive firms' and professional bureaucracies such as consultancy firms and universities in which knowledge workers are predominantly

³⁰ In fact, it can be argued that individual beliefs are always socially constructed. This idea of socially constructed beliefs has been advanced by Mead (1934). He argues that individual beliefs are created by engaging in 'internalized conversations between self and others'. Such conversations require taking the perspective of (significant) others while not all interactants need to be "in separate bodies" (Weick, 1979, p 100). *"It is in the form of the generalized other that the social process influence the behavior of the individuals involved in it and carrying it on, i.e., that the community exercises control over the conduct of its individual members; for it is in this form that the social process or community enters as a determining factor into the individual's thinking.... And only through the taking by individuals of the attitude or attitudes of the generalized others toward themselves is the existence of a universe of discourse, as that system of common or social meanings which thinking presupposes at its context, rendered possible"* (Mead 1934, p. 155).

professionals who feel more committed to their personal projects and clients than to the organization as a whole (Schön 1982). Lately, this need to support the externalization of private knowledge has been considered an important aspect of what has been called "Knowledge management". Several consultancy firms for example introduced knowledge management information systems that capture the knowledge within the organization. I will return to the concept of knowledge management systems in chapter nine, when dealing with their implications for information systems.

Externalization of individual knowledge can take place in a variety of ways, depending on the combination of explicit and tacit knowledge, and the richness of the communication medium used to externalize knowledge.

When talking about knowledge and organizational learning, it is important to keep the distinction between tacit and explicit knowledge in mind. Polanyi (1958) addressed the basic question: why do individuals know more than they can express? That knowledge can be tacit has broad implications for understanding learning, and in particular for the diffusion of individual know-how and individual beliefs. These can be so ingrained that they are taken for granted (Nonaka 1988).

Knowledge expressible in language, is only the tip of an iceberg of our knowledge. According to Polanyi (1958), there are two categories of human knowledge: articulable knowledge that is transmittable with a formal, systematic language; and tacit knowledge that is extremely personal, not formalized and difficult to communicate. Clearly, factual knowledge as in information can be externalized much more easily than tacit knowledge³¹.

Next to the type of knowledge, Daft and Lengel (1986) propose that richness of the communication media selected is closely linked to the learning in organizations. They characterize media as high or low in richness based on the capacity to convey information,

³¹ The importance of tacit and explicit knowledge during organizational learning has been addressed by Nonaka. His ideas on organizational learning are based on an innovation-perspective of 'knowledge management' (Hedlund and Nonaka 1993, Nonaka 1988, Nonaka and Johansson 1985). His arguments build on the premise that the generation and exploitation of knowledge in an organizational context revolves around the interplay of explicit and tacit knowledge (Nonaka 1988).

Although his ideas are enlightening, they have a rather weak theoretical explanation. In this and coming chapters, I will try to provide a more theoretical based explanation for the fundamental process of organizational learning.

whereas information is defined as that which can change a person's understanding or mental representation. Consequently, media richness is defined as the medium's capacity to change understandings within a specific time interval.

Assumption sharing for example, takes place through exchange of opinions, perceptions, and judgments. People can bring different frames of reference to the discussion, so disagreements need to be brought to the surface and resolved. Rich media such as face to face communication and group meetings, are better able to support the construction of shared cognitions and to resolve equivocality through discussion (Daft and Lengel 1986).

4.3.2 Objectivation of knowledge

Whenever this externalization is answered by a confirmation of dominant coalitions within an organization or group, one could speak of objectified knowledge³². Dominant coalitions may be formed by senior management who can be seen as the gatekeepers of formal organizational knowledge. Dominant coalitions may also be formed by a critical mass of organizational members. Whereas in the first case the objectivation of knowledge is primarily influenced by exercises of power, in the latter case objectivation may also be influenced by other social psychological forces.

Objectified organizational knowledge is knowledge that is 'accumulated' in the organizational memory. The organizational memory has been defined by Walsh and Ungson (1991) as "stored information from an organization's history that can be brought to bear on present decisions". In a similar vein, Stein and Zwass (1995) consider organizational memory to be the means by which knowledge from the past is brought to bear on present activities. Later authors make use of a rather formalized and structured image of the concept of organizational memory. I prefer a looser concept, referring also to less structured aspects such as stories, dress codes, etc.

The words objectivation and organizational memory may evoke images of knowledge which is stored somewhere, for example in manuals, in technologies, in the

³² The adjective 'objectified' when referring to organizational knowledge is in fact redundant since organizational knowledge is always brought to a level higher than individual knowledge.

heads of individual members etc. However, organizational knowledge can also be more active, as it is created, adjusted and changed in action. Furthermore, the words 'organizational knowledge' are somewhat misleading since this 'situated knowledge' (Lave and Wenger 1991) is mostly shared by a small collective such as a team of repair men (Orr 1990), a computer call center (Pentland 1992) or a group of information systems designers (Ciborra and Lanzara 1994).

Thus, whenever I speak of organizational learning, it depends on the unit of analysis whether the group or the organization is referred to.

4.3.3 Internalization of knowledge

Through internalization, individuals become and stay organizational members. Internalization has been described by many organizational theorists when dealing with socialization processes or processes of enculturation (Schein 1992). Internalization essentially means becoming an "insider".

Internalization of organizational knowledge can be supported with the use of structured methods such as manuals, training courses, organizational reports, etc. Caution is however needed when relying too much on such formal descriptions of organizational practices or formal teaching modes. "It can lead to the isolation of learners, who will then be unable to acquire the implicit practices required for work" (Brown and Duguid 1991, p. 48).

An important means of internalization informal methods is the exchange of stories. Stories serve an important role in internalizing knowledge that is 'noncanonical' instead of 'canonical' (Brown and Duguid 1991). Canonical practices refer to espoused practices (Argyris and Schön 1978); they are formal descriptions of work, abstracted from actual practices. Noncanonical practices refer to the actual practices taking place in organizations. In other words, descriptions of canonical practices are based on the *opus operatum*, the finished view, while noncanonical practices are based on the *modus operandi*, the way a task, as it unfolds over time, looks to someone at work on it (Bourdieu 1973).

Orr (1990) for example, has conducted ethnographic research on the noncanonical practices of service technicians (reps). He concludes that these 'reps' frequently make use of stories in order to fill the gap between the canonical descriptions of practices found in

manuals and other forms of "directive" documentation, and the actual (problematic) situations that occur in practice. Through story telling, reps exchange their personal experiences and are able to diagnose problematic situations - in this particular case a troublesome machine.

For the reps, learning-in-working or learning by doing is an occupational necessity. Their actual work practices are similar to Levi-Strauss's concept of 'bricolage': the ability to "make do with 'whatever is to hand'" (1966, p. 17). A similar observation is given by Hutchins (1991) in his analysis of navigation teams in the US Navy, and by Hirschhorn (1984) in his analysis of computer operators at Three Mile Island. In both cases, understanding of the task at hand is constructed within teams of operators through forms of bricolage.

Lave and Wenger (1991) introduce the concept of "legitimate peripheral participation" as a way to promote a noncanonical way of internalization. It deals with the 'rightful' possibility to participate in action, in order to learn the practice in detail. Brown and Duguid (1991) argue for more awareness of this type of learning:

"It is a significant challenge for design to ensure that new collaborative technologies, designed as they so often are around formal descriptions of work, do not exclude this sort of implicit, extendable, informal periphery. Learners need legitimate access to the periphery of communication - to computer mail, to formal and informal meetings, to telephone conversations, etc. and, of course to war stories. They pick up invaluable know how - not just information but also manner and technique - from being on the periphery of competent practitioners going about their business" (Brown and Duguid 1991 p. 50).

Up until this point organizations have been portrayed as closed systems. Individuals learn from organizational knowledge while at the same time the organization learns from the individuals. The only variance - introduced at the level of the organization - arises through the hiring of new members, through the gradual change of individual beliefs, and the combination of individual knowledge skills.

In the following chapters, other types of learning will be discussed that explicitly

deal with learning processes which may in fact increase the breadth of organizational knowledge. For now, I will continue this chapter on internal learning with an analysis of the possible traps and obstacles that may complicate the process of internal learning.

However, before continuing this theoretical exertion, it is interesting to take a look at a case story on organizational learning. The story is based on a qualitative case studies that have been conducted at a Dutch company: "AZ"³³.

In fact, the story concerns the various processes of learning that took place at an information system design department. It mainly illustrates the problems of learning the department was facing or often did not face. It provides several anecdotes of learning processes that produced inefficiencies. As such it illustrates that learning, when approached from a process perspective, does not always result in positive outcomes such as more intelligence and more efficiencies.

Ethnographic research methods were used based both on interviews as well as observations. The study was conducted from July 1993 until December 1993. I observed the group of system designers for three days in a week on average.

During six months of research, I had interviewed almost all of the people employed at section A and half of the other department members to which section A belonged. Most of these interviews were repeated again after several months. The interviews had an unstructured character; I asked people to reflect on their experiences in order to delve more deeply into the individual perceptions of the situation. All interviews were tape recorded and fully transcribed. Aside from interviews with the personnel manager, department managers, and information system designers, information was obtained from archival study, observations of five plenary meetings, and participation in social events such as drinks, lunches, "outings", etc. Important sources of information were gossip and idle talk. Especially after a month of getting used to each other, people started to perceive me as a confidante. It was predominantly out of these informal conversations that ideas of learning emerged.

In this chapter as well as in the following three chapters, anecdotes of the story are

³³ In order to maintain the anonymity of the people, the organization and the sections have been given different names.

used to enliven the theory with practical illustrations³⁴.

INTERMEZZO I

LEARNING FROM NEWCOMERS AT AZ³⁵

The hiring of newcomers can be an important trigger to learn. Newcomers look at the organizational world afresh and may see imperfection, inadequacies, and weaknesses that 'oldtimers' do not see anymore. Newcomers can also bring in new ideas which may be a significant source of variation. Although newcomers may stimulate change, conservative tendencies within the organizations often block this learning process.

AZ is one of the largest non-profit service providers in the Netherlands. The company can be typified as a paternalistic bureaucracy although at present, because of commercialization processes things are changing significantly. In the past, AZ provided life-long employment for its employees; turnover was always a rare phenomenon. Possible follow-up training courses were all taken care of by AZ and until recently, newly hired employees were trained at the company school. In short, during its hundred and fifty years of existence up until recently, AZ provided security, certainty, and a future. For many employees, this perceived "soft-cushion" identity was an important reason to apply for a job at AZ.

The information system design department employed seventy people and came into existence through the division of a former computer department focussing primarily on programming, into a programming and a design department.

Necessary criteria for the job of information systems designer were primarily based on years of appointment at AZ. Although some in-house training courses in information systems design were offered, most designers continued using the same standards that guided their previous job as computer programmer. For example, programming was done

³⁴ Although the story as well as the story described in Intermezzo II, chapter seven, are used in this thesis only to enliven the theory, conducting the two case studies and analyzing the material has been an important source from which the present theoretical arguments enfolded. Hence, the two case stories should be considered as results of two exploratory case studies that have been substantially contributed the theory.

³⁵ This story is a short version of the paper "Dynamics of mutual learning" (Huysman 1996a).

more or less in isolation; communication exchange among colleagues, the manager, and the customers was limited. The learning that occurred among these former programmers was highly individual; sharing of knowledge only occurred sporadically. As a result, the evolution of the information systems function did not bring about a significant change in the dominant occupational routines. The all-prevailing soft-cushion identity of AZ as well as the dominant engineering conception of the occupation were left untouched.

Because financial resources were not a major issue during its early years - the department had its own large budget - the demand of and supply for information systems could grow steadily. Traditionally, this growth in demand was answered by contracting temporary designers from external software houses. At the beginning of the nineties when AZ introduced a reform policy in order to increase the amount of service provision, this admission policy was changed. Because the reform symbolized prosperity, and implied that the growth in demands for computerized information systems would only increase, it was decided to hire system designers on a more permanent basis. New entrances were created and a new group of twenty five system designers in total were hired. These "newcomers" shared several characteristics which made them strikingly different from the existing group of designers: the "old-timers". For example, almost all were in their thirties, and, in contrast to the old-timers, most new comers had received professional training in information systems design. During their education and subsequent practical experiences at other companies, they learned several occupational routines that differed from those traditionally used at the department. Unlike programming which was perceived as a more solitary task, system design involved continuous interaction with customers. Formal documentation of the functional designs, the use of a standard methodology, and the exchange of experience ("walkthroughs") were considered important professional routines. Newcomers for example learned that users cannot easily communicate their information requirements, making constant interaction between designer and users an important part of ones job. As one of the newcomers remarked:

"Actually we work as sociologists, we constantly try to distillate one reality out of all the different stories users tell us ... it seems to be pretty difficult for some people around here"

Although because of these characteristics, the newcomers resembled system designers working at professional software houses, there was one feature that made them different from them. In contrast to software houses where values such as risk taking, high income and variety are dominant, AZ' identity espoused values such as security, certainty, and a future which stimulated the newcomers to apply for a position at AZ³⁶. It is striking that these motives did not differ very much from those of the old timers. As a new comer remarked:

"Look, people decide to work for AZ because it is a company where there are no intense pressures and where you don't have to work sixty hours a week to finish your work. On the other hand, your boss doesn't provide you with a big car, you don't earn a huge salary, and your career won't go that fast. But on the other hand, you do have a more relaxed working climate, and more possibilities to work part-time. You see my wife also works and we have two kids, I can't work sixty hours. Look, I don't work thirty two hours a week to work eight hours additional during the night".

Consequently, a mixture of social worlds was brought in by this group of newcomers: they shared with the old-timers their preference for security and safety, while their occupational knowledge was similar to that present at software houses.

This mixture of social worlds provided a potential opportunity for the existing group of designers to learn new professional routines from the group of newcomers. After all, the two groups were not so different from each other as to hinder mutual communication. Although they had different opinions about the way of doing the job, both groups felt more at ease with the AZ' soft cushion identity than with a, as "touch" perceived culture of software houses. However, as will be described below, because of several learning inefficiencies, the hiring of the newcomers did not result in a change of the dominant occupational routines.

The staff expansion made it necessary to subdivide the department into several design sections. The following story is limited to a description of one design section:

³⁶ It should be noted that during that time, the employment opportunities for analysts was relatively prosperous.

"section A". This particular section differed from the other sections in terms of its learning behavior. Whereas the other sections gradually evolved into more or less professional groups, section A seemed to have a hard time adapting to more professional work routines. Although it is hard to determine the exact causes for this difficulty, there are at least three reasons that may possibly have caused this difference. For one, at section A, oldtimers surpassed the new comers in number. Whereas other sections were populated by five to seven system designers of which on average half were newcomers, at section A twenty designers were employed of which more than half were former AZ programmers.

Furthermore, according to designers of various sections, the users for whom section A designed systems were more demanding, faced more turnover and the required systems were more complex to design compared to the users of other sections.

In addition, in contrast to the other sections where relatively young people were appointed the job of section manager, section A was managed by someone of the old AZ school. The manager shared several characteristics with the general department manager and the other old-timers. They all were in their forties and fifties, all had received an engineering education, and because of their years of working at AZ, all had to some extent internalized the culture of AZ. The years of socialization to the occupational routines strengthened their world views. According to the managers, the current situation did not require significant changes.

Section A was coping with a serious problematic relation with the users of the systems they designed. Users for example complained about the quality of the delivered systems and the time it took to deliver these systems. Whereas the users pointed at the section; most section members perceived the users as the wrongdoers. Users could not specify their information requirements correctly, and when they did, they changed them constantly.

Although I do not want to doubt the integrity of the complaints of section A, part of these troubles was a result of learning from past experiences. As mentioned, the old-timers, including management, used the routines that they had learned during their occupation as computer programmers. This practice of programming did not require close contact with users. What is more, as trained engineers they were used to work with predetermined, well arranged, and fixed specifications. These skills differed importantly from the skills of the newcomers.

Because the oldtimers shared offices and cooperated in projects with the newcomers, their day to day workpractices made it possible to learn from each other. However, these interactions enforced only negative sentiments from the side of the newcomers:

"I know some people of whom I think that given the systems they deliver, that these people.. they don't belong here anymore. You see, in the past, a lot of people, people who did not grow up within the age of automation but who happened to roll into it... they obtained some knowledge and have been stuck into it. That's it. They haven't changed a bit. And still they persist in their competence. Really, they're not of much use".

"So you try to improve the communication yourself. But it's..., maybe it's a bromide, but it has to come from both sides and there are always colleagues, to put it mildly..., well, we sometimes call them a couple of snoozers."

Attempts to convince the oldtimers that the section badly needed a change mostly ended up in frustration and a dissociation from the existing group of designers. Without being inhibited by management, the old-timers continued doing what they always did. Some of the newcomers dissociated themselves from the oldtimers by continuing to perform according to their personal occupational standards. Others dissociated themselves by becoming more and more discouraged. Since past efforts to make a change at the organizational level were mostly suppressed or ignored, many newcomers gave up on the power of the dominant coalition³⁷.

Only one year after the introduction a reform plan to increase the amount of services, the decision was made to commercialize. It was time to revitalize the company. Top information managers of AZ began to discuss the position, function and strategy of the

³⁷ Hirschman (1970) makes a distinction between 'exit, voice and loyalty' when referring to the strategies people use when faced with organizational decline. The behavior of the newcomers suggest a fourth, less extreme option than 'exit': dissociation.

information systems department. This discussion was also fed by the negative outcomes of inquiries that were held among the users. For example, it appeared that section A was often too late in delivering systems, that the systems did not match the specifications of the users, that the section was considered as operating too bureaucratically, and that designers were accused of hardly ever visiting their users. Informed by these negative results, the Director of Information decided to replace the manager of the information systems design department by a much younger and highly career minded manager who belonged to the more professional world of information systems. He perceived his job of "changing the culture" (his own words) as a personal learning experience. Unlike most designers who identified themselves with the company, this manager identified himself more with the world of commercial software houses. He propagated the necessity to become more "cost-aware, client-friendly and commercially minded" and asked for the participation of the department members in this change-process. Although many designers of the other sections welcomed the efforts of the new manager, most of the designers at section A showed a general lack of interest.

This seeming passivity might be due to past experiences. The designers interpreted the information concerning the change-process that the manager propagated in terms of their own experiences. They had learned that a manager was the boss who primarily should command and control subordinates. For example, one of them answered the question as to why he didn't participate in the change process in the following way:

"[It] doesn't interest me, look that's for the bosses, it's not my job ... I would like to be good in what I am doing, but I am not paid for other things, if so they must pay me more".

From years of experience at AZ, these designers had learned not to communicate informally with bosses, not to see them as equals and not to run the risk of being perceived as different. Consequently, the new manager's appeal to participate actively in the change process, for instance by introducing new ideas and by coordinating one of the many smaller, locally initiated change-projects, was answered by much skepticism.

There was also a history of many reforms which had been initiated but never put into practice. From this experience of "reforms as a routine" (Brunsson and Olsen 1993) the oldtimers learned to be highly skeptical about future reform attempts:

"... first everything had to be centralized and now everything must be decentralized, soon if it's all decentralized, everything must be centralized, it's a strange experience, I must say"

The behavior and attitude of the old-timers frustrated the new manager more and more. He considered the perceived passivity of the old-timers at section A as a sign of severe conservatism and adversity to change. In reaction to this, the manager became more authoritative and oppressive:

"If they cannot change, we can do something about that, if they are not willing to change, that's something different, we do not need them anymore".

While pointing to the seriousness of the reform policy of AZ, the new manager told section A that lay-offs might be considered if they did not change their current behavior. This only reinforced the ongoing negative learning spiral. For example, the manager's threat with lay-offs was perceived by the old-timers as a confirmation that a "conspiracy" was going on among the bosses. The whole reform process was seen as an attempt to get rid of the oldtimers. As a result, the old-timers felt more or less paralyzed which only enhanced the manager's perception of the present passivity.

At this point, the research period I had agreed upon with AZ ended. A year after these events occurred, the department manager moved to a commercial consultancy firm. The department was significantly reorganized without people being dismissed although some of the old-timers were appointed to another job within AZ or took an early retirement.

The organization under study, section A in particular, did not take advantage of the opportunities it had in changing existing organizational knowledge. Newcomers could have acted as transmitters of new (occupational) knowledge and as such as initiators of

substantial organizational learning.

Institutional knowledge obtained through the education as well as during experiences at other organizations was introduced into the organization through the employment of new system-designers. There were opportunities for the externalization and diffusion of this knowledge among the existing group of designers. Indeed, because newcomers and old-timers worked together on projects and mostly shared their office with each other, communication between the two groups was present. However, due to various internal dynamics that will be discussed in more detail in the coming chapters, conservatism prevailed. Most newcomers gave up trying to make a difference. By the time top-management realized the necessity to 'revitalize' the information systems department, many newcomers were already in the process of unlearning their professional knowledge. The attempt of the new department manager to change the department and in specific section A into a user-oriented, commercial organization was answered by much skepticism and passivity.

In this case story, events appeared rather black and white. To be sure, there were three other sections within AZ that did not experience such an explicit downward learning spiral. I have chosen to describe a part of the study that provides the most significant examples of learning inefficiencies. The causes of these inefficiencies will be discussed in the coming chapters.

4.4 TRAPS AND OBSTACLES DURING INTERNAL LEARNING

Up until this point, I have discussed the conceptual foundations of internal learning process. Internal learning serves the purpose of improving existing knowledge through experience. However, it is not hard to think of traps and obstacles that may hinder the fulfillment of this purpose. These learning barriers have been depicted by one or more broken arrows in figure 4.2.

Traps and obstacles occur in situation where organizations learn while assuming that the circle is closed, when in practice this circle is broken in one or several situations. In the following, four forms of learning are described that frequently occur in practice. These forms of learning may obstruct the process of institutionalization. Because institutionalization, or the process of internal learning, can be considered as the basis of

all types of learning that will be discussed in this thesis, the barriers that will be described in this chapter also apply to feedback learning, learning from others and creative learning.

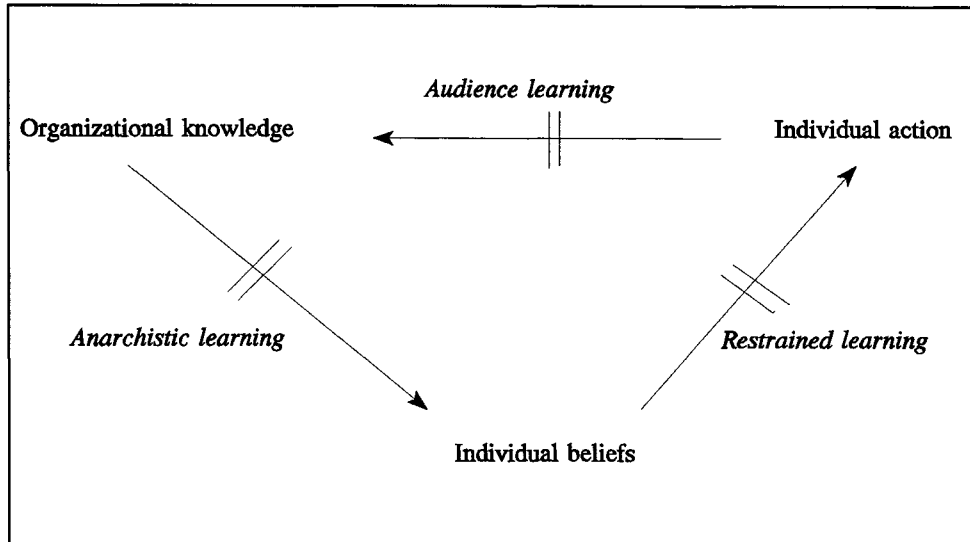


Figure 4.2 Barriers to successful internal learning

- Audience learning

Audience learning occurs when the process of externalization is hampered. Organizational knowledge construction is not based on individual action although dominant coalition may well think it is (March and Olsen 1976)³⁸. The individual does not affect organizational knowledge - at least not in an unambiguous way.

A learning barrier may be the result of problematic interpretation of individual action by the 'gatekeepers' of organizational knowledge. In many situations, management plays an important, sometimes obstructive role as gatekeeper of organizational knowledge. As part of their task, managers are able to decide what (individual, group and inter

³⁸Kim (1993) refers to fragmented learning as distinct from audience learning. He describes fragmented learning in situations where individuals learn but the organization as a whole does not, which to my knowledge is completely similar to what March and Olsen (1976) mean with audience learning.

organizational) knowledge becomes organizational knowledge³⁹. Management information systems are one of the prominent instruments which support this translation process although, as will be argued in chapter nine, this support can be rather problematic.

Because of the influence of gatekeepers, organizational learning can be influenced by various conservative tendencies. For example, selection of the knowledge can be influenced by self-referential forces (Huysman et al 1995). Like most human beings, managers often see what they believe rather than believe what they see. As a result, managers tend to select information that suits their image of the organization and of themselves.

Audience learning occurs frequently as a learning barrier and can be the cause of many conservative tendencies that will be discussed in the next chapter.

At AZ a learning barrier was present during the mutual learning between newcomers and management of the department. In contrast to the oldtimers, most newcomers had received a professional education in system-design. Because of this education and as a result of previous jobs in system-design, these newcomers shared a professional attitude towards the occupation of system-designer. These shared individual beliefs guided their actions. For example, they expressed the need to others to communicate more frequently with users, to make use of a standard design methodology, to write end-reports, and to introduce "walk-throughs". Management acting as the dominant coalition of the organizational knowledge, did not value these alternative 'professional' standards which the newcomers introduced. In fact, it did not occur to the manager, as being an oldtimer himself, that new occupational routines were introduced within the organization. The manager was convinced that there was enough communication between him and the group of designers. Although this was probably correct in the eyes of the managers and the old-timers, the newcomers felt as if their efforts to change the dominant routines were ignored. This process of 'audience learning' became crucial in determining lack of significant changes within the department.

- Anarchistic learning

³⁹ This gatekeeping function of management also works the other way around. As translators of the various information flows, their potential power is impressive (Smircich and Morgan 1982).

Whenever the process of internalization is hindered, individual action is not based on internalized organizational knowledge. In such cases I refer to anarchistic learning⁴⁰. In figure 4.2 this learning process is depicted by the broken arrow between organizational knowledge and individual beliefs.

Anarchistic learning is a conspicuous form of learning within professional organizations. In general, the action of professionals such as surgeons and lawyers, is more driven by professional knowledge acquired during their education than by organizational knowledge (Abbott 1988).

Learning at AZ provides an example of anarchistic learning. Whereas some newcomers in time internalized traditional routines, other newcomers could be considered as "dye-hards". During their socialization at AZ, they deliberately did not internalize dominant organizational knowledge.

Although I refer to anarchistic learning as a 'learning barrier', to a certain extent, organizations need some anarchistic behavior in order to learn new ways of thinking and doing. Individual beliefs that differ from the organizational beliefs can be important sources for change and innovation. As a group or as a single actor, individuals are at the center of organizational learning. They often have a front seat while observing the performances of the organization and that of others (Brown and Duguid 1991). In chapter seven, when dealing with creative learning, anarchistic learning will be dealt with as being an important way of promoting the creation of organizational learning.

- Restrained learning

When the process of expression is hampered, I refer to restrained learning. Restrained learning occurs when members of dominant coalitions think they learn from individual members although in reality they only learn from individual actions and expressed beliefs while they ignore underlying personal beliefs. Figure 4.2 portrays this learning barrier with the broken arrow between individual beliefs and individuals actions. Situations in which the organization learns without paying adequate attention to private individual beliefs are not at all exceptional. At least three causes of restrained learning can

⁴⁰ This concept is similar to 'opportunistic' learning introduced by Kim (1993). He refers to this type of learning when "*organizational actions are taken based on an individual's (or small group of individuals) action and not on the organization's widely shared mental models*" (p. 46). I point at a similar process. However, whereas Kim is essentially referring to topmanagement acting on their own behalf, I do not restrict this form of learning as caused by opportunistic reasons.

be identified: defensive routines, role-constrained learning, and the power of habits.

Restrained learning can be the result of 'defensive routines' (Argyris 1990). Organizational members often use routines to mask their vulnerability. This means that people tend not to be too open about their personal beliefs and tend to act and think in ways that conform to organizational espoused theories (Janis 1972).

March and Olsen (1976) refer to role-constrained learning when individual learning has little or no effect on individual behavior as a result of constraints of role-definition, cultural constraints and standard operating procedures.

Things become even more alarming when individual beliefs do not matter at all; in this case the organization learns from individual action while this action is triggered by organizational action instead of personal beliefs. I refer to this type of learning as 'learning by habit'.

Learning by habit is a frequently occurring form of learning during which individuals learn from the lessons captured in the organizational knowledge repertoire, not from actual experiences. In fact, this form of learning reflects a simple stimulus-response model of learning. It deals solely with the retention of experiences; there is no room for variation of organizational knowledge.

An illustration of this habitualization process has been given by Pauka and Zunderdorp (1988).

Imagine a cage with monkeys. A banana is hanging on the ceiling of the cage with a small staircase underneath it. A monkey goes to the staircase to reach the banana. But at the moment he puts a foot on one of the steps all other monkeys are sprayed. After a while the same or another monkey tries it again with the same result: again all monkeys are drenched by spraying. Every monkey that will try to climb the stair hereafter will be hindered by the others.

Now imagine, we take one monkey out of the cage and replace him with a new one. This newcomer spots the banana and wants to climb the stairs. To her horror all the monkeys jump on her neck. After another trial she knows it for sure: whenever you get on the stairs the others will knock you down. Again, another monkey will be replaced by a newcomer. And again, the newcomer climbs the stairs and is knocked down. This will be repeated until every monkey that has experienced the spraying will be replaced. In the end, no monkey will ever climb the stairs.

This story may sound familiar to everyone who has ever been a newcomer in an organization. Why-questions will often be answered by "just because" answers. Why are we not allowed to climb the stairs? No one actually knows, it is just because we don't do that around here. Individual beliefs and individual action are fused together.

Another example of restrained learning can be found among some of the newly hired system designers at AZ. While they were trying to adapt to guiding routines within the department, several newcomers began to express feelings of frustration. Although their personal beliefs were in line with occupational routines that they learned during their professional education, they perceived it as too demanding to put these private beliefs into action. This disconnection of individual beliefs and individual action was mainly a result of the perceived dominant traditional culture. To some of the newcomers, this restrained learning was the result of previous learning processes, as expressed for example by "I don't want to stick my neck out anymore". Many had experienced that previous efforts to introduce alternative routines were ignored or even played down by the oldtimers and superiors.

- Simultaneous learning

Learning units, such as individuals, groups, teams, and departments, but also customers, clients, and other stakeholders seldom act as isolated units. Simultaneous learning by several interacting units can be quite complex and difficult to unravel (Lounamaa and March 1987). Because of simultaneous learning, units face confusing experiences. Because learning units are usually unaware of this complexity, intervention often comes too late. "If one's own actions are embedded in an ecology of the actions of many others (who are also simultaneously learning and changing), it is not easy to understand what is going on" (Levinthal and March 1993).

The story of AZ provides an example of such inconsistency as a result of confusing experiences. Because of a policy of reform, twenty-five system designers were hired to join an existing large group of oldtimers. These newcomers differed significantly from the oldtimers. For one thing, newcomers shared a rather professional attitude towards the job of system design learned during their prior professional education. This professional attitude was almost lacking among the oldtimers. At the time new system designers were hired, the department gradually became less efficient, at least in the eyes of its users. This

inefficiency was due to the very fact that the department lacked a professional standing. Thus, from an outsider's point of view, one could not imagine a better moment to hire this new group of professional designers. Unfortunately, the manager's adaptation to his users was confounded by the adaptation to the old-timers behavior. This confusing experience in turn influenced the manager's interpretation of the new knowledge that was brought in by the system designers. The resulting situation prevented the department from changing into a more professional group of system designers.

4.5 CONCLUDING REMARKS

In this chapter I have described the process of internal learning. Internal learning must be considered as the skeleton of all other forms of organizational learning discussed in the following chapters. This idea sharply contrasts with most contemporary ideas on organizational learning. Many writers on organizational learning perceive organizational learning as almost synonymous with innovation and change. Learning is then perceived as thinking (and sometimes acting) in a different way.

In this thesis, the process of organizational learning is considered as many-sided. Whether organizations learn from feedback information, through imitating others, or through experimentation, the foundation of all this learning is internal learning. Learning always involves a reciprocal relationship between externalization of personal (shared) knowledge and internalization of organizational knowledge.

So far, I have described the process of learning by using a rather static model. It explains the learning processes of internalization and externalization and ignores significant changes. Internal learning is an ideal-typical description of a form of learning that only occurs for example during socialization processes and during the process of sharing individual knowledge, or during the process of learning from past experiences⁴¹.

Learning occurs within a closed system which leaves only limited room for

⁴¹ This latter process has also become known as the 'learning curve' and can be considered as the first form of organizational learning that has been given explicit attention. It was the US Airforce who discovered in the 1930's that the direct labor hours needed to complete a production task, decreased significantly as the total number of times the job was performed increased. This decrease is attributed to the learning that takes place every time the worker repeats the task. The outcome of this learning is a reduced time and as such reduced cost per unit.

variation. In particular, during internal learning, variation is introduced by hiring newcomers or by combining existing individual knowledge. In the coming chapters, this variation will be introduced step by step. Through feedback learning - discussed in the next chapter - variation will be seen to be a result of organizations adapting to environmental responses. Through learning from others, variation will be considered as a result of imitation and cooperation. In the section on creative learning, I will deal explicitly with the creation of variation.

CHAPTER FIVE

FEEDBACK LEARNING

5.1 INTRODUCTION

In the previous chapter, organizational learning processes were treated which are cut off from external influences. The organization was depicted as a closed system. Clearly, however, organizations seldom act as closed systems. Organizations are continuously confronted with external influences to which they adjust.

In this chapter I will delve more deeply into processes of learning from feedback information derived from the environment. Attention is paid to the general process of feedback learning; and its functionality will be discussed. This will be followed by a description of various situations in which learning from the environment may become problematic. The chapter starts however with a brief review of the literature on organizations and on their environmental relationship. Given the importance of the relationship between environment and organizations during feedback learning (as well as the other two types of learning to be discussed in the coming chapters), it is necessary to be explicit about the way the organizational environmental relationship will be approached.

5.2 ORGANIZATIONS AND THEIR ENVIRONMENTS

Relevant literature on the organizational environment has grown so extensive and heterogeneous that every discussion about organizational environments calls for defining one's perspective on the concept. This is especially relevant since a preference for one or more theoretical perspectives on organizational environmental relationships highly influences further discussions on learning from and with the environment.

Organization studies started to acknowledge the significance of the environment somewhere in the late 1960's and 1970's. Studies began to treat an organization's environment as an important determinant of organizational structure and to focus explicit attention on how variations in exchange relationships led to different patterns of organizational

action. The three most important approaches during that time were the contingency theory, the resource dependence theory, and transaction costs economics. All three approaches brought the organization's environment into clearer focus.

The contingency theory, pioneered by Woodward (1965), Lawrence and Lorch (1967) and Thompson (1967) represented an advance over previous theories in portraying organizations as open systems, dependent on and affected by their environment. These authors treated adaptive processes as primarily rational and organizations as systems for transforming inputs into outputs. Organizational structure varied in response to the complexity and uncertainty of the tasks confronted which determined the nature of information processing requirements (Galbraith 1973).

The basic premise of the resource dependence theory (Pfeffer & Salancik 1978) is that organizational behavior can be explained by looking at the organization's context. The most problematic relation from the organization's perspective is that of dependence on external social actors. Organizational participants seek to manage these dependencies in a variety of ways, including bargaining, co-optation, forming trade associations, and negotiating mergers.

Williamson's (1975, 1985) work in transaction cost economics focusses on the formation and maintenance of transactions. Williamson contrasts two broad structural alternatives commonly employed to govern transactions: market systems and hierarchical structures or organizations. The latter are expected to replace market arrangements as transactions become more complex, frequent, and uncertain.

One of the serious shortcomings of all three approaches is that they assume organizations to be essentially rational actors. Many organization theorists contend that such an assumption is rather problematic (e.g. Brunsson 1985, 1989, March and Olsen 1976, Starbuck 1993). From their study it seems that rationality does not underlie many actions in organizations. This poses a serious challenge to theories of organization-environment relations which presume adaptive rational action on the part of organizations. Furthermore, these theories downplay or ignore the inter-organizational networks in which organizations are embedded (Davis and Powell 1992). Network theories (e.g. Burt 1980, Hakansson 1987, Nohria and Eccles 1991) that came up in the beginning of the eighties, offer possibilities to challenge this problem.

Recently, the contributions of the 'new institutionalist'⁴² (March and Olsen 1989, Meyer and Rowan 1977, Powell and DiMaggio 1991, Scott 1987, Zucker 1987) have extended the perspective of the organizational environment and acknowledge constraints posed by the environment on organizations. Perhaps the most novel tenet of the institutional approach is the insistence that organizational environments must be viewed in cultural as well as in traditional technical and economic terms (Scott 1983). Organizations and their members are embedded in cultural systems composed of rules, norms, and assumptions which are taken for granted, all of which define the way their world operates. DiMaggio and Powell (1983) contend that "organizations compete not just for resources and customers, but for political power and institutional legitimacy, for social as well as economic fitness" (p. 150). This also entails what Meyer and Rowan (1977) identify as "conforming to rational myths"⁴³. The efficiency of these myths are presumed on the basis of their wide adoption, or their championing by professionals.

An important advantage of the new institutionalism is its recognition of less rational behavior of organizations in relation to their environments (March and Olsen 1989). Furthermore, it directs attention both to the macro level of legal systems, state affairs, and profession, and to the micro level of everyday interactions. At the micro level, institutional practices and beliefs can hinder individual action and individual cognition. Hence, the new institutional theory is also able to explain the problems organizations have in change, reorganization and learning.

In line with the institutional perspective, in this and coming chapters cultural aspects of the environment such as beliefs and institutional practices are seen as having just as much impact as the more traditional technical and economic aspects. This knowledge can both constrain the thinking and acting of individuals as well as facilitate it. In the first situation, rational myths, such as state control, are translated into constraints on

⁴² The main difference between institutionalism and new institutionalism is that the former is more oriented towards politics whereas the latter is more sociological oriented. Furthermore, the older variant of institutionalism is most interested in the local communities in which organizations are embedded. By contrast, the new institutionalism focuses on non-local environments. Environments are more subtle in their influence *"rather than being co-opted by organizations, they penetrate the organization, creating the lenses through which actors view the world and the very categories of structures, action and thought"* (Powell and DiMaggio 1991, p 13). See for other differences (Powell and DiMaggio 1991).

⁴³ There are multiple and diverse sources of rational myths, such as public opinion, educational systems, laws, courts, professions, ideologies, regulatory structures, certifications and accreditation bodies, and governmental requirements (Meyer and Rowan 1977).

action. In the latter case, institutional practices and beliefs can be used to construct and legitimate new courses of action. Professional standards for example are an important aspect of knowledge derived from institutional environments, with vital potential for organizational learning.

5.3 THEORIES OF FEEDBACK LEARNING

By feedback learning I refer to learning from ones own experiences through feedback information from the environment⁴⁴. This feedback information can be derived for example from customers, responding to product quality and price, students responding to curricula, and citizens responding to social experiments. Hence, feedback learning requires communication with the environment and can occur through feedback instruments or through less formalized forms of communications. Examples of feedback instruments are consumer-research, opportunities for public comment, policy-evaluation⁴⁵.

Feedback learning is based on a system-theoretical perspective; it bears some resemblance to the writings of Argyris and Schön (1978). These authors claim that organizations learn from their failures through feedback information from the environment. This information can be carried back to correct the action strategies of the organization. In this instance, the authors talk about 'single loop learning'. Whenever information is carried back to guiding variables, such as basic norms and values which direct action strategies, the authors talk about 'double loop learning'. In practice, double loop learning seems to occur rarely. According to the authors this is because the dominant organizational theories in use obstruct openness and readiness to change.

This process of single versus double loop learning is pictured in figure 5.1

Although the two concepts have proven to be useful as clarifying concepts, the rare occurrence of double loop learning has probably more to do with theoretical arguments which lie behind the concept than with organizational practice an such. Organizational change is seldom of a discontinuous nature; double loop learning in practice is most often

⁴⁴ The environment is considered as those people and organizations that do not belong to the subjectively defined organization though perceived as relevant to this organization.

⁴⁵ It is not within the scope of this research to analyze these and other mechanisms through which organizations gather feedback information.

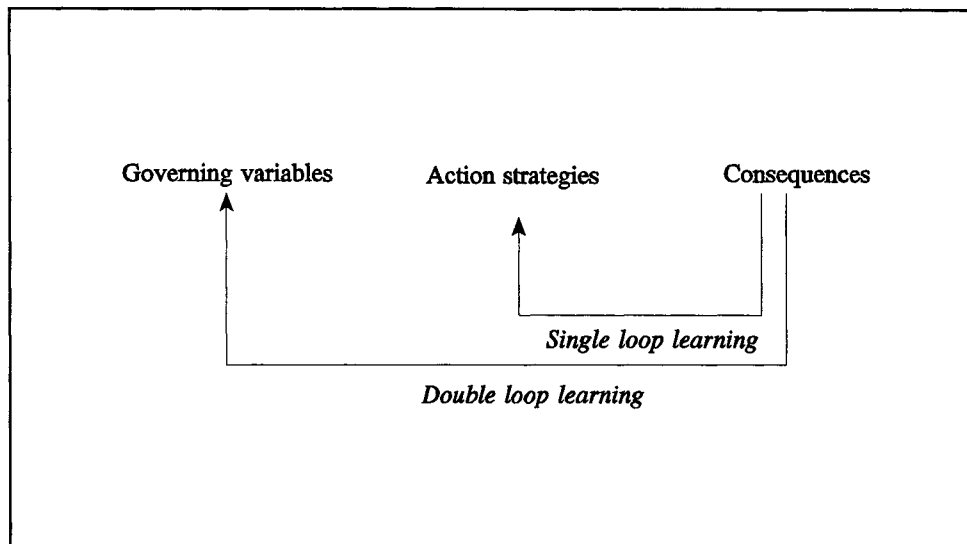


Figure 5.1 Single and double loop learning (based on Argyris and Schon 1978)

the result of an accumulation of various single loop learning processes. I will return to this idea in the next two chapters.

In fact, Argyris and Schön have a rather mechanistic and rational perspective on organizational learning. They assume that problems of learning such as the difficulties in achieving double loop learning processes, can be avoided when action is based on "governing values of Model II: valid information, free and informed choice and internal commitment" (Argyris and Schön 1978, p. 136). By assuming that these values can be reached, they stand in almost total opposition to the interpretative and constructivist approach toward organizational life. Writers within this latter tradition argue that there cannot be such a thing as valid information, nor is it possible to reach free and informed choice. Organizational members subjectively interpret information and construct their environments, while their choices are influenced by significant others.

The idea that organizational learning is often far from being rational has been acknowledged by March and his colleagues. Differing from Argyris and Schön, they argue that although organizations may strive to learn in a systematic manner, in practice organizational life is too unpredictable and complex for learning to occur smoothly and efficiently (March and Olsen 1976).

To illustrate this idea, they use a model of rational choice. They seek to

demonstrate that decision making and learning are seldom founded on rationality. Figure 5.2 depicts this model as an ideal-typical image of learning from the environment.

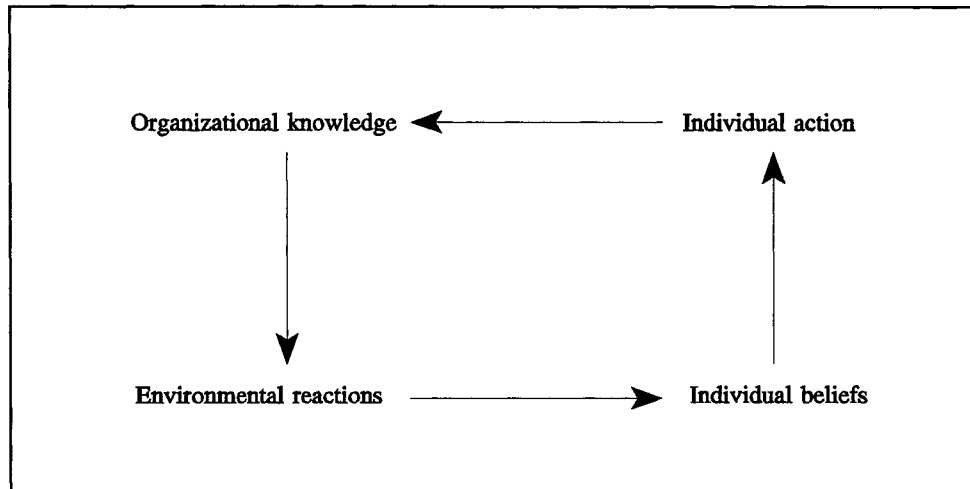


Figure 5.2 The complete cycle of choice (adapted from March and Olsen 1976)

The model assumes that individuals adapt their beliefs to environmental response. The change in beliefs or frames of references leads to a change in individual action; this in turn generates a change in organizational action which corresponds to the response of the environment. The initial idea of the model is to show that the 'complete cycle of choice' is full of impediments and will never be closed.

In the following section, I will turn to a discussion of the complexities of feedback learning when the cycle is broken at one of the four linkages.

Previously in chapter four, problems of learning were treated when the linkage between individual beliefs and individual actions are broken. Similarly, problems arise when the linkage between individual actions and organizational knowledge is broken. Given that feedback learning explicitly deals with learning from the environment, the present discussion will be restricted to organizational learning while the linkages with

environmental reaction are broken⁴⁶.

5.4 TRAPS AND OBSTACLES DURING FEEDBACK LEARNING

Feedback learning is susceptible to various obstacles that should be taken into account as conditions for successful feedback learning. March and Olsen (1976) introduced four learning barriers while referring to adaptive learning. These learning barriers are "role constrained learning", "audience learning", "superstitious learning" and "learning under ambiguity" (see figure 5.3).

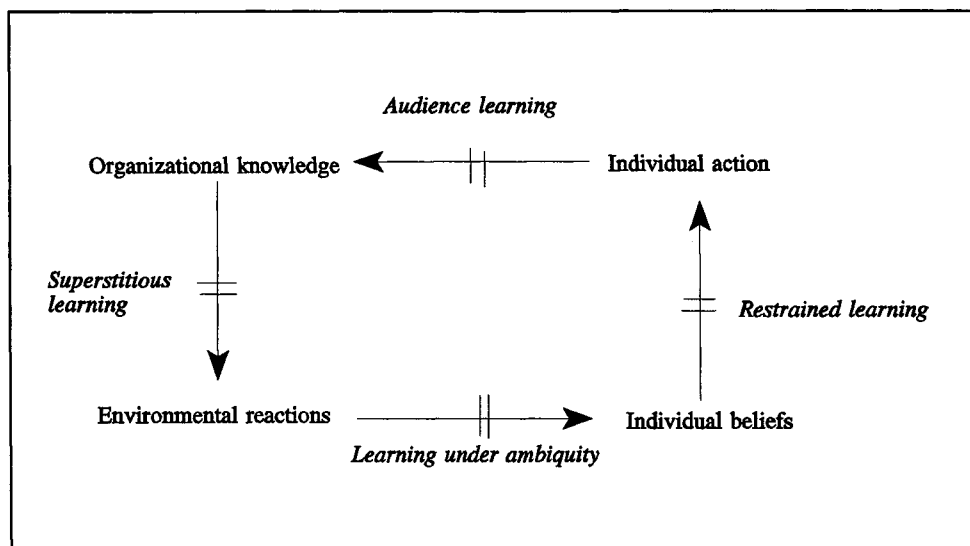


Figure 5.3 Incomplete cycle of choice (Adapted from March and Olsen 1976)

Although they all apply to feedback learning, the first two learning barriers are also present during internal learning as discussed in the previous chapter. Superstitious learning and learning under ambiguity preeminently belong to situations of learning from feedback situations.

- Superstitious learning

⁴⁶ Next to the addition of environmental reaction, the original model of March and Olsen also differs from the model presented in chapter four (figure 4.2) in that I refer to organizational knowledge while March and Olsen refer to organizational action. Their is only a small difference between the two concepts. Organizational action has been considered individual action based on organizational knowledge.

Superstitious learning refers to situations in which the organization learns from information that is wrongly considered as feedback information. Actions and events in the environment sometimes may have little to do with what the organization does. Nonetheless, many organizations are very self-centered and perceive these environmental actions as environmental responses.

"Environmental acts frequently have to be understood in terms of relationships among events, actors, and structures in the environment, not as responses to what the organization does. As a result, the same organizational action will have different responses at different times; different organizational actions will have the same response" (March and Olsen 1976, p. 17).

Superstitious learning occurs when environmental action is considered as a reaction or response to organizational action. Individuals adapt to these reactions which, as a result of organizational knowledge construction, results in a change of organizational action. Although it is believed that this action will satisfy the environmental demands, in fact it will not since it is based on a misconception of the connection between the organization and its environment.

Avoiding superstitious learning calls for an awareness of the problematic assumptions within organizations involving their interaction with the environment. Avoiding superstitious learning thus calls for an awareness of the organizational tendency to rationalize chance and irrational actions.

"The world of the absurd is sometimes more relevant for our understanding of organizational phenomena than is the idea of a tight connection between action and response" (March and Olsen 1976, p. 17)

An example of superstitious learning can be found in the AZ case. Users of the information systems design department had criticized section A for delivering systems that were not in line with their expressed information requirements. According to these users, the section delivered inefficient systems. It was striking that the other three information systems design sections of the department were not subject to such severe criticism by their users. A further analysis revealed that the users of the systems developed by section A were remarkably different from the users of the other sections. For example, most of

the users of the criticized section were traditionally confronted with a high turnover of personnel and various organizational reform attempts. As a result of these changes, information requirements often became obsolete. Furthermore, according to two information systems designers who moved from section A to another section, users of the systems that section A developed, were less willing to communicate with the designers after they had specified their information needs. Whereas a continuous communication with the users is nowadays seen as part of the job of designer, the users - dominated by technical engineers - perceived this as a sign of incompetence.

Hence, environmental reactions to the actions of section A in the form of severe criticism from the side of the users was not (only) a result of the malfunctioning of the section but (also) due to exogenous factors. Nevertheless, the information systems department took these complaints to heart. Learning from these environmental reactions, for example by improving their way of working, would only slightly satisfy the expressed complaints. Perceived malfunctioning of the members of section A may just as well be a result of the malfunctioning of the users.

- Learning under ambiguity

Learning under ambiguity refers to situations in which it is not clear what happens within the environment or why it happens, though people impute meaning to certain environmental events (March and Olsen 1976). It occurs when there is inconsistency between environmental response and individual beliefs concerning those cues. Instead of individuals acting on perfect, objective information, individuals construct their own definition of the situation. The interpretation of environmental responses is often problematic since environmental actions and events are frequently ambiguous. Moreover, organizational members have difficulties in observing events, in interpreting them free from egocentric tendencies, and free from the interpretation offered by others.

Learning under ambiguity has many points in common with audience learning discussed in chapter four, since both deal with the interpretation of information. Whereas audience learning refers to internal information, learning under ambiguity refers to external information.

Figure 5.3 depicts this learning process by a broken arrow between environmental reactions and individual beliefs.

One of the consequences of learning under ambiguity is that organizations tend to learn in a rather conservative way. Alternative ways of thinking and acting offered by environmental action and events are frequently by-passed or interpreted in such a way as to conform to the status quo.

Learning under ambiguity occurred frequently at AZ. An example of this learning-barrier is the attitude-formation of the newly hired 'professional' manager. In his task to "change the culture" he was confronted with negative reactions of his subordinates. He translated these environmental reactions in terms of his own frame of reference.

The waiting game played by the oldtimers was understood as a sign of indifference and even a deliberate attempt to prevent any change, which to the new manager was the cause of all the problems within section A. Had this manager been more informed about the previous experiences within the organization, such as the continually expressed urge to reform without any achievement, and the silent confirmation of their work practice by the previous manager, he probably would have interpreted this waiting game differently.

5.5 CONCLUDING REMARKS

In this chapter the process of feedback learning has been described. Feedback learning occurs when organizations learn from their actions through the reactions of the environment. Feedback learning is susceptible to at least two important conditions that creates inefficiencies. The first has been referred to as 'superstitious learning', the second to 'learning under ambiguity'. Superstitious learning is caused by a lack of self-knowledge and knowledge of the environment. The causes of learning under ambiguity have to do with difficulties interpreting feedback information. Awareness of its possible occurrence may help organizations that engage in intentional feedback learning.

In general, feedback learning can result in unintended conservatism. The organization only learns from its own experiences without keeping an eye on other environmental events. When organizations solely rely on feedback learning, they will evolve in a rather ego-centric manner. Only information that is perceived as environmental reaction is considered as relevant. An organization characterized by an ego-centric evolution faces the danger of losing its legitimacy and/or competitiveness within a larger ecology of organizations. In order to avoid this, organizations also learn by adopting

knowledge constructed by other organizations. This process of learning from others will be discussed in the next chapter.

CHAPTER SIX

LEARNING FROM OTHERS

6.1 INTRODUCTION

In chapter five it was argued that organizations learn through their interaction with the environment by adjusting to feedback information. Too much reliance on feedback learning however may yield conservatism in the long run: the organization learns from its own experience while ignoring the experiences of other organizations. Learning from others can be seen as a way to avoid this conservatism, at least to a certain extent.

Learning from others involves the diffusion of external knowledge. External knowledge is knowledge that is generated by the experience of other organizations. Organizations capture the experience of other organizations through the transfer of encoded experience in the form of technologies, codes, procedures, or similar routines (Levitt and March 1988). It can be obtained through benchmarking, through the use of gatekeepers and boundary spanners, through the recruitment of individuals, through inter-organizational cooperation, mergers, acquisitions, or through less conscious diffusion processes such as those obtained through institutional forces (Powell and DiMaggio 1991).

Learning from others centers on the acquisition of second-hand experience and has also been labelled 'vicarious learning' (Huber 1991). When learning from others leads to becoming more informed about what corporate competitors are doing - and how they do it - the literature also refers to the term "corporate intelligence" (Porter 1980).

6.2 DIFFUSION OF EXTERNAL KNOWLEDGE

Learning from others calls for an intrusion into the environment. Daft and Weick (1984) argue that organizations as interpretation systems differ in the extent to which they actively intrude into the environment.

Passive organizations accept whatever information the environment gives them.

These organizations do not actively search for information within the environment. They may set up receptors to sense whatever data happen to flow by the organization. They accept the environment as given.

Other organizations actively search the environment for new knowledge. For instance, they may hire organizational consultants, technically oriented MBA's; they may create planning and forecasting departments, or they may engage in intensive networking⁴⁷. In the extreme case of learning by imitation, organizations can even become involved in business espionage.

In the literature on innovation, people who act as active receptors have been called 'boundary spanners' (Aldrich and Herker 1977, Leifer and Huber 1977, Tushman and Scanlan 1981). During the popularity of the contingency theory, many writers pointed to the importance of boundary spanners for organizational functioning. The scanning of the environment represents a difficult organizational problem because people cannot comprehensively understand the environment (Cyert and March 1963). Learning from others is rarely a completely rational event. The perceptions of the 'relevant external knowledge' is crucial for the future functioning of the organization (Daft, Sormune and Parks 1988). Given that this perception is largely a function of prior related knowledge, learning from others sometimes results in to path dependency.

There are basically two ways by which external knowledge may diffuse. The first mechanism is diffusion through organizational alliances or interfirm cooperation. Interfirm cooperation varies according to the degree in which it is institutionalized. For example, organizations may learn from each other through the trading of information amongst (competing) organizations (Hippel 1988), through informal networking (Kreiner and Schulz 1990) and formal networking (Pennings and Harianto 1992), through collaboration in R&D organization (Dodgson 1993a), and through mergers and acquisitions.

The other mechanism through which external knowledge may diffuse is via the process of organizational imitation. Given that the basic process of cooperation is also one

⁴⁷ I return to this process of informal networking in the next chapter in which also a case story about informal networking is presented. Although the case provides illustrations of cooperation, the actual process was more focussed on learning with others than on learning **from** others and as such is more an illustration of learning by exploration.

of imitation - in fact, inter-organizational cooperation can be considered a process of mutual imitation - I will restrict the following discussion to learning from others as a process of organizational imitation.

In the case of pure imitation, organizations - conscious or unconscious - opt for a 'follower' strategy. External knowledge is adopted without a significant adjustment. In practice, imitation often takes the form of 'creative adoption' in which both the external knowledge as well as the organization are adjusted in order to find a better match.

According to Levitt and March (1988) the drive to imitate others is often stimulated by "(p)ressures on organizations to demonstrate that they are acting on collectively valued purposes in collectively valued ways" (p. 330).

DiMaggio and Powell distinguish three forces that trigger processes of organizational imitation: coercion, mimicry, and normative pressures⁴⁸. These forces can be used to explain processes of learning from others and the mechanism for the diffusion or transfer of external knowledge (Levitt and March 1988).

Coercion refers to a process of diffusion that is more or less imperative. Organizations become increasingly similar to each other because they are to a certain extent forced to adopt particular knowledge. This diffusion process can be attributed in large part both to political influence and to the problem of legitimacy; it often arises without the interference of an intermediary⁴⁹. Examples are governmental regulations, rules of professional associations, unions or trade associations. Coercive imitation results from being dependent on other organizations as well as from cultural expectations in the society within which organizations function. Coercive imitation can be a direct and

⁴⁸ DiMaggio and Powell (1983) refer to coercive, mimetic, and normative forces as alternative explanations for the 'iron cage' thesis of Weber. Instead of arguing that organizations become more and more bureaucratic because this "*rational spirit's organizational manifestation was so efficient and powerful a means of controlling men and women that, once established, the momentum of bureaucratization was irreversible*" (Weber 1922, cited by DiMaggio and Powell, p. 63), DiMaggio and Powell argue that although organizations do indeed become more and more homogeneous and bureaucracy remains the common organizational form, this is mainly due to coercive, mimetic, and normative isomorphic change.

While making use of these three concepts, I do not necessarily argue that organizations become more isomorphic. Rather I use these concepts to explain what reasons organizations have to imitate each other.

⁴⁹ Within the theory of mass-communication, this flow of information has been called the 'needle pin flow of information' (Lowery and De Fleur 1988).

explicit imposition of organizational models on dependent organizations. It can occur for example as a result of legal requirements of the state such as financial reporting requirements (DiMaggio and Powell 1991). It may also be more subtle and less explicit, which is for instance the case with writing scientific articles.

Mimicry refers to a process of diffusion that is triggered by an explicit desire to copy others. A contemporary example of mimicry is organizational bench marking. Organizations frequently model themselves after other organizations when technologies are poorly understood (March 1988), when goals are ambiguous or when the environment creates symbolic uncertainty (Powell and DiMaggio 1991). The copying behavior of Japan while modeling Western standards, and in turn the Western reaction in modeling Japanese ways of organizing, are striking examples. Organizations also model themselves after similar organizations in their field which they perceive to be more legitimate or successful. Other organizations thereby act as dominant models for receiving organizations. Brunsson and Olsen (1993) have for example argued that many reform policies, such as the reform policy of the Swedish Rail, are set up because of such mimetic processes.

Normative pressures can also be considered as forces that stimulate imitation. This diffusion process is less conscious than the previously discussed diffusion process and often stems from professionalization (DiMaggio and Powell 1983). While using the analogy of an epidemiology of a disease, Levitt and March (1988) refer to normative pressures as resulting in a two-stage diffusion process involving "the spread of a disease within a small group by contagion and then by broadcasting from them to the remainder of a population"⁵⁰. Examples are knowledge diffused through educational institutions, through experts, through selection of personnel, and through trade and popular publications such as the book of Peters and Waterman (1982) on excellent organizations, Hammer and Champy (1993) on Business Process Redesign, and Senge (1992) on organizational learning. These and other books have been used as important recipes to inform managers how they should act.

⁵⁰ Within the literature on mass-communication, this process is called "the two-step flow of communication" (Lowery and DeFleur 1988)

6.3 ADOPTING EXTERNAL KNOWLEDGE

Up until this point, an impression may have been given that learning from others is a rather passive activity in that the organization adopts knowledge from outside without adjusting it to its own needs. Many theorists have taught us already that it is often impossible only to imitate others without adjusting innovation to the idiosyncratic demands of the organization, or without adjusting the organization to innovation, or both (Leonard Barton 1987, Rosenberg 1982, Schumpeter 1934).

Nevertheless, the two theories that explicitly deal with learning from others have been criticized for not paying full attention to this active aspect of organizational imitation. Both the literature on institutionalism as well as theories on the diffusion of innovation are much too focussed on a one-way communication process and as such provide a rather passive image of organizations.

Institutionalism has the tendency to portray organizations as passive receivers of institutional practices. Organizations are viewed as static entities, which simply react to and adapt to the latest trends (Sahlin Anderson 1991). As Powell (1991) argues:

"we need an enhanced understanding of both the sources of heterogeneity in institutional environments and the processes that generate institutional change. The literature (on institutional theory MH) suggests a static, constrained, and over socialized view of organizations" (Powell 1991, p. 183)

The same is true for the literature on diffusion. Although written more than a decade ago, the following observation of Rogers (1983) still applies to the literature in general:

"Most past diffusion studies have been based upon a linear model of communication, defined as the process by which messages are transferred from a source to a receiver. Such a one-way view of human communication describes certain types of communication; many kinds of diffusion do indeed consist of one individual, such as a change agent, informing a potential adopter about a new idea. But other types of diffusion are more accurately described by a convergence model, in which communication is defined as a process in which the participants create and share information with one

another to reach a mutual understanding" (Rogers 1983, p. xviii)⁵¹.

In general, learning from others is primarily based on the idea of Schumpeter (1934) that innovation is merely a combination of technical as well as organizational innovations; organizations creatively adopt innovations. Or as Sahal insightfully concludes:

"Technical progress is largely a matter of learning by direct experience. The implication is that there are built-in obstacles to the transfer of technology, since innovation depends not so much on knowledge imported from without as it does on experience from within. .. This is not to say that it cannot be effectively transferred from one organization to the other. Rather, success in technology transfer hinges upon meticulous alterations in the design of the chosen technique to suit the requirements of differing production systems. (Sahal 1991, p. 195-197)

Rogers (1983) refers to reinvention when dealing with degree to which an innovation is changed or modified by a user in the process of its adoption and implementation. Until the mid-1970's, adopters of innovations were considered to be passive imitators of innovations, rather than active modifiers and adapters of new ideas. When diffusion scholars began to analyze the process of implementation, they observed that quite a lot of reinvention occurred.

Sahlin-Andersen (1991) too has demonstrated that imitating models as a result of institutional practices, such as coercive, normative and mimetic forces should be seen as a more active process, rather than the static notion provided by writers within the discipline of the institutional theory. She refers to the adoption of models as an 'editing' process, which is the process of translation, re-interpretation or re-invention.

The author argues that the process of editing is restricted by a number of editing rules. The first set of rules concerns the context. When models are applied in a different setting from the one where the model has previously been applied or in a setting different from examples referred to in combination with the model, time- and space-bounded

⁵¹ It is striking that, apart from his ideas on re-invention, the work of Rogers can still be criticized for such a one-way directed perspective on diffusion.

features are excluded. Consequently, models that are too bounded in space and time may not diffuse as easily as those that are possible to edit according to the first set of editing rules.

A second set of rules concern the formulation and labeling of a model. Models which attract attention are spreading. Consequently, diffused models tend to be formulated to attract attention.

A third set of rules concerns the logic of the stories. According to Brunsson (1989), the dominant logic of organizations is that of rationality. Consequently, models are formulated according to a problem-solving logic.

I would like to add a fourth rather significant set of editing rules: the model should not depart too much from existing organizational knowledge.

The ability to recognize the value of new, external information is largely a function of the organization's level of prior related knowledge (Cohen and Levinthal 1990). This ability is essential for the success of learning from others and highlights the importance of previously discussed learning forms. Although too much internal and feedback learning will result in conservative behavior, the consequences of a lack of these forms of learning may be even more dramatic. Internal and feedback learning assure the learning of internal experiences. They guarantee that experiences are translated into organizational knowledge. Without 'successful' internal and feedback learning, organizations are unable to gain any benefits from their various activities (March 1991). Through 'successful' internal and feedback learning organizations may create so-called 'organizational core competencies' (Prahalad and Hamel 1990).

This case for incremental knowledge building has its downside. When organizations are too focussed on the fourth editing rule, they will face the risk of "unintended conservatism". For example, although the recruitment of individuals can lead to significant changes in organizational knowledge, most often this practice tends to be history-dependent since the selection-criteria of the newly hired personnel frequently reflect the characteristics of the predecessor. March and March (1977) for example found that school superintendents in Wisconsin were so alike in background as to make further career advancement random. Kanter (1977) referred to "homosexual reproduction of management" when addressing the filtering of personnel approaches.

Thus, the down side of learning from others - just as that of internal learning and feedback learning - is the chance of being much too reactive. One of the most frequently mentioned disadvantages of this conservatism is losing track of ones competitors. Less often addressed as a down side of conservatism though equally important is the organizational ignorance of innovative and creative potential within the organization. This creative potential which is available within organizations as a result of the combination of individual knowledge, could well produce variance and heterogeneity - the essential ingredients of knowledge creation (Nonaka 1988). Organizations which seek to attract and preserve the best knowledge are better off embracing individual creativity and experimentation. In the next chapter, I will delve more deeply into this process of creative learning.

6.4 TRAPS AND OBSTACLES DURING LEARNING FROM OTHERS

The most important trap in which organizations may fall during learning from others is the inefficient capacity to absorb external knowledge. As mentioned, learning from others cannot take place "ins Blaue hinein". Related organizational knowledge forms an important part of imitation. Cohen and Levinthal (1990) have coined this function of organizational knowledge as the 'absorptive capacity' of an organization. Absorptive capacity is "the ability to recognize the value of new, external information, assimilate it, and apply it to commercial ends" and is largely a function of prior related knowledge. With the use of empirical findings about the learning of R&D departments, these authors argue that the extent to which new ideas can be appropriated and absorbed by an organization is a function not only of the channels through which ideas spread, but also of the knowledge capabilities of the receiving organization. Being aware of ones own unique knowledge through internal learning and feedback learning is thus the first step towards innovation.

Learning from others can be modelled as a circular process in which through assimilating external knowledge, organizational knowledge is (re)constructed. This organizational knowledge in turn directs the environmental scanning process that may result in the imitation of new knowledge (see figure 6.1).

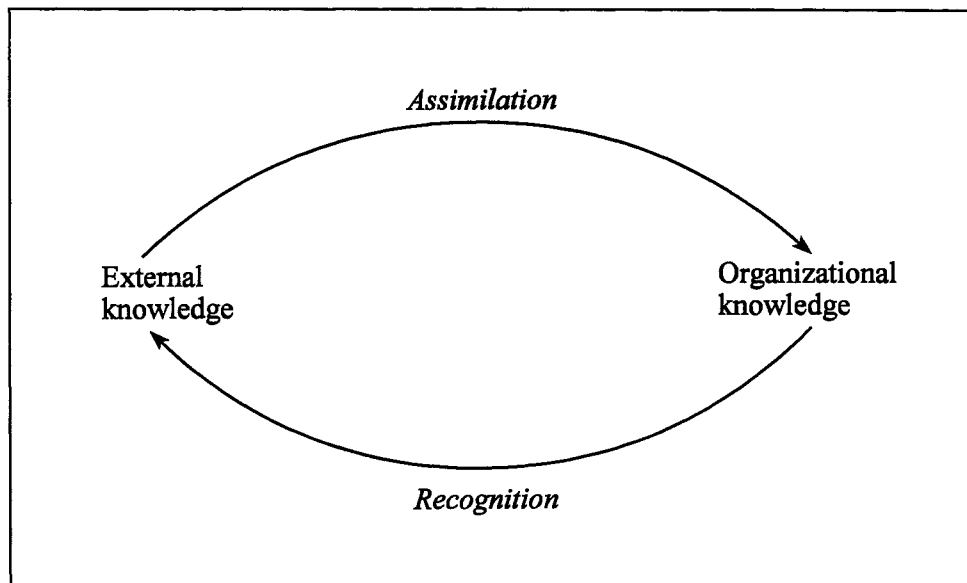


Figure 6.1 Organizational imitation cycle

Imagine the cases in which one of the two arrows is broken⁵². When the arrow between the construction of organizational knowledge and gathering of new knowledge is broken, external knowledge is not recognized by the organization as a result of deliberate search processes. Rather, in such cases introduced external knowledge is for example a result of unconscious imitation processes or of coercive imitation processes. An example of this situation can be found in the case story of AZ. The story provides an illustration of such an 'unmatched' imitation process. The organization under study hired a group of new system designers who, as a result of their shared educational background, introduced new 'professional' ideas for implementing information systems design. The consequences of this innovation could have been that through the hiring of new members, the organization imitated normative professional standards. However, this introduction of new knowledge was not a result of deliberate action from the part of the department. In fact, the organization did not even recognize this new knowledge. In the words of Cohen and Levinthal (1990), the system design department lacked sufficient absorptive capacity to recognize this new knowledge.

⁵² As all models, figure 6.1 represents an ideal typical situation of learning from others. Thus, the model should be seen as an analytical model to assess the learning capacity of organizations.

In turn, a disconnection between external knowledge and organizational knowledge means that the organization is not able to assimilate external knowledge into its existing way of thinking and doing. This can be the result of not being able to 'edit' the new knowledge to fit its own idiosyncratic situation. The system design department of AZ for example, did not adjust its way of thinking and doing with the result that a mismatch between the newcomers' and the traditional way of thinking and doing remained. Again, the system design department lacked sufficient absorptive capacity to assimilate this new knowledge.

Successful assimilation not only depends on related organizational knowledge, it also requires internal support to implement the external knowledge⁵³

Implementation of external knowledge requires 'internal networking'. Internal networking is important to create an awareness within the organization and is needed to gain the necessary support to implement the innovation. Isolated individual participants cannot easily contribute to learning from others.

Product champions for example are potential contributors to innovation. A vast literature on the implementation of innovation has shown that the presence of champions is an important factor associated with the success of innovations (e.g. Beath 1991, Burgelman and Sayles 1986, Kanter 1983, Maidique 1980, Schön 1963). This success in turn, depends heavily on a support group surrounding the champion. As Kanter argues, an important aspect in the process of innovation is the process of 'coalition building' (Kanter 1988). While most studies emphasize single roles such as the sponsor (Galbraith 1982), Kanter reveals the importance of a whole coalition, or set of allies. A comparison of over 115 innovations found a set of allies, often peers, behind successful innovations (Kanter 1983). This support group can be seen as the 'dominant coalition' or 'gatekeepers of organizational knowledge' as discussed in chapter four.

6.5 CONCLUDING REMARKS

Processes of learning from others deal with a specific process of innovation in which introduction of new knowledge is a result of assimilating external knowledge.

⁵³ This condition also applies to creative learning, discussed in chapter seven.

Learning from others is helpful in accumulating external experiences that the organization itself is unable or unwilling to acquire. As mentioned in section 6.4 the process of learning from others may be less successful when various conditions are not taken into account. Furthermore, too much reliance on this form of learning has its own downside. Past success of imitating other organizations for example, will likely enforce future patterns of learning since it negatively influences the probability of considering alternative models to imitate (March 1994).

In addition, relying too much on the experience of others assures that the organization cannot create its own unique experiences, which are needed to get ahead of ones competitors. Also, the speed in which technologies are changing nowadays makes it more and more difficult for organizations to follow and adapt to these changes all the time. Hence, learning from others should be balanced with creative learning. I return to this balancing issue in chapter eight.

The next chapter will deal with another aspect of innovation in which the introduction of new knowledge is a result of experimentation. This 'creative learning' is to some extent similar to learning from others because the newly introduced knowledge is almost always a product of a new combination of existing knowledge (Schumpeter 1934). Furthermore, all preconditions to successful imitation, such as internal networking and organizational absorptive capacity, also apply to creative learning. Creative learning departs however from learning from others in that the learning is a result of an internal drive to create rather than to seek new ideas. It also differs from the learning discussed in this chapter in that the organization does not so much learn **from** others as it learns **with** others. Through creative learning, organizations may avoid unintended conservatism that can be a result of internal learning, feedback learning and learning from others.

CHAPTER SEVEN

CREATIVE LEARNING

7.1 INTRODUCTION

In this chapter processes of creative learning are described. With creative learning I refer to innovative processes that are internally initiated within the organization. Through creative learning, organizations create their own 'organizational reality'⁵⁴, rather than seek this reality through imitating the environment.

Although approached from different angles, creative learning has received increased attention in organization and management studies. Senge (1991) for example refers to generative learning and March (1992) to exploration, as learning processes that deal with creating new knowledge. The difference with the concept of creative learning proposed in this chapter and generative learning is that the latter is more focussed on proactive ways of learning while creative learning does not necessarily have to be a result of responding to environmental events. Exploration as a concept introduced in tandem with its opposite 'exploitation', is a broader concept than creative learning. Exploration consists of the pursuit of new knowledge, of things that might come to be known (March 1991) and as such also involves processes of learning from others. Creative learning is a process of exploration that emphasizes internally triggered variation.

Just as learning from others is a form of innovation, so too is creative learning⁵⁵. Whereas the former is mainly focussed on a search process and the editing of this external knowledge in order to find a better match with the organizational knowledge, creative learning deals with an internal drive to create new knowledge. Or in other words, whereas learning from others deals with organizations that want to imitate, creative learning deals

⁵⁴ When talking about reality or organizational reality, I refer to a perceived reality, in line with Thomas' theorem: *"If men define situations as real, they are real in their consequences"* (Thomas 1928).

⁵⁵ In line with Rogers (1983) I define innovating as the introduction of an idea, practice, or object that is perceived as new by the unit of adaption

with organizations that may become models to imitate.

One of the reasons why this type of learning has become popular within the literature on management and organization, is a growing concern for organizations to gain an advantage over their competitors. In order to "beat competitors", organizations become increasingly aware of the necessity to create an organizational core competence (Prahalad and Hamel 1990). Through learning, organizations are able to build an idiosyncratic 'knowledge base' that rivals find very difficult to imitate.

Furthermore, when learning from others is considered the alternative to creative learning, there are at least two reasons why organizations may opt for the latter. Rapidly changing environments make imitating others a difficult enterprise. In addition, as argued in the previous chapter, imitating requires the matching or 'editing' of external knowledge to the existing organizational knowledge. This too complicates the process of learning from others.

Besides mere strategic considerations, organizations that engage in creative learning are more likely to attract and maintain highly competent and motivated people than organizations that do not stimulate creativity. After all, organizations that stimulate (intellectual) creativity may be more attractive to their employees than organizations that suppress their creative and intellectual potential.

Through a review of literature on ways that could promote internally triggered variation in organizational knowledge, I will elaborate on various processes of creative learning in this chapter. Following this review, I will look at the possible occurrence of traps and obstacles during creative learning. First however, a second intermezzo is introduced dealing with a case story on creative learning.

Findings presented in this story were obtained from interviews with the EDP manager and member of the Board of Directors, Mr. Johnson, who can be considered as the Information Technolog-champion of the particular idea. Six interview sessions took place from February 1993 to July 1993, providing more than eight hours of recorded conversation. The interviews were open in the sense that no structured questionnaire was used during the sessions. The main purpose of this explorative research method was to get a full account of the learning process that occurred while implementing an innovation.

During the first interview, Johnson gave an account of the organization, his own

history and some organizational history. He also described activities that occurred in the past two years relevant to his 'innovation'. During the five following sessions, he spoke mainly about activities that occurred within the interval periods and about his plans for the coming weeks or months. This information therefore consisted partly of recall data - the first session - and partly of longitudinal data - the next sessions. A year later, several of the actors mentioned by Johnson, were interviewed in order to increase the reliability of the information⁵⁶.

INTERMEZZO II

CREATING THE MOBILITY PASS AT LEASECO⁵⁷

This short case story concerns the very first stages of the process of creating the Mobility Pass. The idea behind the Mobility Pass was to provide a new service based on smart-card technology. It was generated by a lease car company "Leasing Co" to facilitate and control the travel expenses of its client organizations.

Lease Co is a Dutch car leasing company, set up thirty years ago by a banking corporation. At the time of this research, the Holding of Lease Co had established fourteen units in twelve European countries, in the United States, and in Australia. Eighteen hundred people are employed at Lease Co, of which thirty-six at the Holding.

The idea of a Mobility Pass can be seen as an outgrowth of the 'Travel Card'. The travel card is a credit card that lease-car holders use when filling up their cars with gasoline. Expenses incurred by the client are then administered at the head office of Lease Co.

⁵⁶ The case study demonstrates the importance of conducting research at the very beginning of the innovation development stage. Innovation theory is predominantly focused on activities that occur after the decision to innovate has been made (Kimberly, 1981). Questions such as how ideas, problems and needs are generated often remain unaddressed. As a result, innovations are - mostly implicit - considered a rational answer to a perceived problem. Instead, research on the process of idea-conceptualization reveals the dynamic and unorderly process through which innovations arise and even important, others vanish (Rogers 1983). The reality of these post-adoption processes brings to the forefront the social, political and irregular nature of creating innovations (MacKenzie and Wajcman 1985).

Although the Mobility Pass could have been considered a solution to perceived future societal needs, it started with a technology driven exploration. If the analysis of the Mobility Pass started at the stage in which the decision was made to implement the innovation, significant processes such as the importance of the existing knowledge base, and the failure of most of the projects, were probably neglected.

⁵⁷ This story is a brief version of a paper presented at ECIS Lisbon (Huysman 1996).

Because Johnson was the champion of the Travel Card, he gained a lot of experience with chip-card technology. More important perhaps were contacts that he established with key players in the world of chip-cards. This know-how, his contacts and his drive to innovate made him very eager to extend the function of the Travel Card. Because of his past success with the Travel Card, the Board of Directors left him a free hand to explore further possibilities for its use.

During that time, Johnson was already in the process of communicating his ideas with his friends and acquaintances within both the travel industry and the chip-card industry. After some time, brainstorming about all feasible and unfeasible possibilities produced a vague and ambiguous vision of a new product that at the same time would change the general mission of the company. The overall idea was to introduce a chipcard that clients of Lease Co could use for all kinds of travel expenses and purposes, ranging from an ID-card used at the airport, to means of payment at car parks and public transport. This implied that in the future the mission of Lease Co had to change into one that acknowledged a larger package of services for business-travelers. Leasing cars would become just one of the various services offered by Lease Co.

In order to communicate his vision to others, Johnson introduced a name for it: "the Mobility Pass".

Now that the initial vision was born, it was time to explore its possibilities.

Success of the Mobility Pass rested on the cooperation of various actors within the transport and automotive sector, such as bus companies, railways, parking services etc. Such cooperation for example involved installation of card-machines in busses, at railway stations, and car-parks, to scan the pass and register the traveller. Consequently, Johnson started to contact people active in these sectors. Because of his previous activities with the Travel Card, many of these people were members of various previously formed network relations.

Without having a specifically defined concept of the Mobility Pass and without knowing how his ideas would eventually evolve, Johnson contacted various network partners in order to explore opportunities. During these discussions, new ideas arose, old ideas changed, new co-operating partners entered the scene while others left.

From the seemingly inexhaustible opportunities which the vision of the Mobility

Pass offered, only a few were seriously taken into consideration⁵⁸.

During the period that Johnson and I met, three ideas emerged concerning the Mobility Pass of which two failed and one reached (as he called it) "the commercial stage". After the study, this last project also fell through. However, Johnson is still active in the chip card business, still being convinced that his ideas will finally succeed.

Here is a brief description of the three ideas generated by the Mobility Pass.

One of the first plans that emerged concerned use of the pass to get access to parking-places in various larger cities in the Netherlands. Johnson started by contacting the head of a department of parking management in a large city in the Netherlands, who was a member of Johnson's extensive network. This person seemed to be interested and introduced Johnson to the company that produced parking meters to discuss the possibilities of engineering special slots for cards. This company too was interested; Johnson seemed the right person for them to expand their buyers market. Because they sold meters to many large cities in Europe, Lease Co could possibly set the standard for new types of parking machines. Unfortunately, after two months of negotiation, the local city authorities decided not to invest in the new parking meters which meant that the whole idea reached a deadlock. Johnson however did not consider it a failure:

"I am as arrogant to say that without the know-how on smart-cards, they cannot get something off the ground. You need each other, you will not succeed with an infrastructure only, you also need card owners. (...) I will wait, they will finally show up".

During the following months, Johnson kept on "stirring in the parking market", meaning that he tried to create a reputation as the one - and only one - who had the necessary know-how for smart-cards. By giving interviews and presentations, attending conferences and workshops, but also by establishing informal contacts, he tried to make

⁵⁸ Examples of projects that have been taken into consideration before the time of research were the use of the Mobility Pass to pay for telephones calls, taxis, and trains.

himself a known figure in the world of smartcards and the travel industry.

Although not originally anticipated in the early stages of idea generation, carpooling became another of the many projects within the "mobility puzzle". The idea of using smart-cards to settle the expenses of carpooling came from a financial investment bank, Johnson's previous employer. This banking firm had been contacted by a client who wanted his own project on carpooling with the use of chip-cards, to be financed by the firm. Being a former colleague and still a member of Johnson's informal network, the bank employee in question was knowledgeable about Johnson's experience with chipcards and his vision of a Mobility Pass. This former colleague then brought him in contact with the client. Together with a company that promotes carpooling in the Netherlands: "Carpool Netherlands", they organized a pilot project to explore the possibilities of using a chipcard to pay for carpooling. However, the pilot study showed that people didn't mind having a slot placed in their cars, but what they did mind (due to tax reasons) was to settle their expenses formally. This finding signalled the end of the carpool project.

Again, enthusiasm of others toward the project was dampened, but Johnson stayed optimistic:

"I am over-optimistic. For me, I swallow..., a few drinks.. and I've got so many exciting things to do. (...) When I notice that things do not work, I just think of the story about the thousand ideas of which only two will finally give you profit".

Although this project did not succeed, other ideas emerged out of it as a result of knowledge diffusion, or the spread of rumors. For example, Carpool Netherlands had its office in the same building as "Flexlease", a company which had just been set up to initiate flexible forms of car leasing. Since they were neighbors, the director of Flexlease heard about Johnson's background and asked him for his assistance in car leasing. In return he introduced Johnson to a bus company which at that moment was thinking about starting up introducing shuttlebus services for commuters. The company had not yet completely formulated the concept; for example it didn't know how to find clients. For this group, Johnson arrived at precisely the right moment. He could present the necessary clients (employees) if the company would make use of the mobility pass. Although both partners had signed a contract, the project finally failed, predominantly because of

political reasons.

At the end of my research period, no project had resulted in a decision to commercialize the Mobility Pass. In fact, two years after the research, the whole idea of this pass is still in a conceptual stage. Enthusiasm for its implementation lessened. Because the patience of some members of the Board of Directors was at an end, Johnson was asked to spend more time on other information technological aspects that were considered more relevant to his field of competence.

In a critique of the prevailing rational myth of innovation as a goal-directed orderly enterprise, Schön notes:

"In fact, bringing new technology into being is a complex process in which goals are discovered, determined and modified along the way" (Schön 1967 p. 231).

This quotation seems to be very appropriate to characterize the case history of Mr. Johnson. The whole idea of a mobility-pass emerged out of a lengthy process of creative learning or knowledge creation.

This example shows clearly the unpredictable nature of creative learning, the importance of networking, the continuous character of seemingly discontinuous innovations, and the specific behavior of (IT) champions during creative learning.

It shows that creative learning is centered on the creation of new knowledge albeit it is not imperative that this newly created knowledge results necessarily in an outcome such as as organizational innovation. Although the creation of the Mobility Pass was a case of creative learning, in the end it did not (yet) result in a new product or service.

7.2 INTERNALLY TRIGGERED VARIATION

Whereas during feedback learning and learning from others the introduction of variety in organizational knowledge takes place from outside, during creative learning introducing variety takes place from within. During feedback learning and learning from

others, variety is brought into play by adaptation to environmental complexities (Ansoff 1965).

The second way of introducing variety in organizational knowledge is much more diffuse. Internally triggered variation can be introduced through various processes that will be discussed below.

7.2.1 Enactment processes

Weick (1979) argues that the evolutionary model of 'variation - selection - retention', should be adjusted when used to analyze organizational behavior. Instead of variation, he uses the term enactment to address the more active role of organizational members in creating the environment which then imposes on them. Besides merely responding to an independent environment, organizations frequently engage in shaping and understanding an environment in creative ways.

Enactment is a combination of two things. First, it is "an action of bracketing" (Weick 1979, p. 130). By bracketing, Weick refers to an action to isolate environmental changes for closer inspection. These aspects of enactment can be seen as fundamental to all four learning processes discussed in this thesis. Bracketing leads to a focus on a specific aspect of the environment. In the AZ case, bracketing occurred for example by the old timers. Their perception of the environment was based on a selection of environmental reactions. That is, approval of their superior was the most dominant environmental reaction; other reactions such as the complaints of their users were not taken into consideration.

Secondly, enactment refers to active intervention in the environment. In the specific case of creative learning, this aspect of enactment is particularly relevant. Enactment "occurs when the actor does something that produces an ecological change, which change then constrains what he does next, which in turn produces a further ecological change, and so on" (Weick 1979, p. 130)⁵⁹.

It is this idea of active intervention in the environment, that has stimulated Daft and Weick (1984) to connect enactment with the process of experimenting and innovation.

⁵⁹ Ecological change stands for changes in the enacted environment of the organization.

The authors propose a matrix of four different kinds of organizational processes, each process characterized by its relationship with its environment (see table 7.1). They name these relationships "undirected viewing", "conditioned viewing", "discovering" and "enacting".

	Passive intrusiveness	Active intrusiveness
Unanalyzable environment	Undirected Viewing Constrained interpretations. Nonroutine, informal data. Hunch, rumor, chance, opportunities	Enacting Experimentation, testing, coercion, invent environment. Learning by doing
Analyzable environment	Conditioned Viewing Interprets within traditional boundaries. Passive detection. Routine, formal data	Discovering Formal search. Questioning, surveys, data gathering. Active detection

Table 7.1 Four different kinds of organizations characterized by its relation to its environment (Taken from Daft and Weick 1984)

Only discovery and enacting as processes of active intrusiveness are of relevance during innovation. Organizations where discovery predominates are the archetype of a conventional innovative organization, one which responds - often with great efficiency - to changes it detects in its environment (Brown and Duguid 1991). Both feedback learning as well as learning from others are a "discovery" way of learning. By contrast, organizations where enactment dominates are explorative. Daft and Weick describe enacting organizations as follows:

"These organizations construct their own environments. They gather information by trying new behaviors and seeing what happens. They experiment, test, and stimulate, and they ignore precedent, rules and traditional expectations (Daft and Weick 1984, p. 288).

Thus enactment allows changes to emerge and anticipates its effects instead of waiting for changed practices to emerge and responding to them.

As mentioned in chapters two and three, the idea of a proactive organization has stimulated many contemporary writers to "prescribe" a new type of organization: "the learning organization" (e.g. Garvin 1993, Pedler et al 1991, Senge 1992, Swieringa and Wierdsma 1990). In this chapter, as in all preceding chapters, the **process** of organizational learning is addressed instead of its **outcome**. Thus, rather than asking what the outcomes of enactment processes are, I am more interested in what factors produce creative learning processes⁶⁰.

7.2.2 Technology of foolishness

The active intervention aspect of enactment is similar to the notion of 'technology of foolishness' as opposed to a 'technology of reason' (March 1988). Whereas the latter refers to the rational well-considered sequence of thinking followed by action, the former refers to the opposite sequence of action followed by thinking. March argues that technologies of reason should be complemented with technologies of foolishness. The notion of a technology of foolishness is a call for playfulness within organizations, "a deliberate but temporary relaxation of our normal rules so that we can experiment. We need to play with foolish alternatives and inconsistent possibilities". In order to promote this technology of foolishness, March (1988) suggests several possibilities. These possibilities will be reviewed shortly in relation to contemporary writings on organizational learning.

- Treat goals as hypotheses.

Organizations should experiment more often with different goals. Contemporary ideas on organizational learning have introduced the idea of scenario planning and simulation studies which could stimulate the process of open mind brainstorming about the consequences of present and alternative goals (DeGeus 1988, Isaacs and Senge 1992,

⁶⁰This is also one of the received critics of the theory of Weick. Sandelands and Drazin (1989) state that the labels of enactment, selection, and retention refer to the outcome of the process stages and not to the process itself. They conclude that Weick did not keep up to his own task of characterizing organizational activities in terms of processes. (Sminia 1994).

Senge 1992, Stata 1989, Vinnix 1990).

In the Lease Co example, Johnson also treated his goals as hypotheses by keeping his goals as vague as possible. In fact, he preferred to use the word 'vision' instead of goals. While testing various scenarios with network partners, an ambiguous vision gradually became transformed into clearer goals.

- Treat intuition as real.

"When we take intuition more seriously, we could consider alternatives that do not necessarily rationalize and justify our thinking and acting" (March 1988, p. 263).

Again, Johnson often referred to his intuitive style of working and the support he got from his colleagues to foster this intuitive thinking and acting. Given that most organizations are not used to treating intuition seriously, he often met resistance.

"People often want hard figures before they decide, but nothing of the Mobility Pass was written down, it was just a belief, based on nothing but a certain feeling about the future".

Although not explicitly referring to intuition, contemporary literature on organizational learning recommends treating 'real' individual belief-systems as more important than their *expressed* beliefs. Many authors within the organizational learning debate advocate open unconditional communication in which theories in action become public (Argyris 1990, Bohm 1990, Isaacs 1993). These dialogue sessions should be unconditional in that everything people think or feel should be aired so that not merely 'espoused theories' are shared but real 'theories in use' (Argyris and Schön 1978).

- Treat hypocrisy as a transition.

"A bad man with good intentions may be a man experimenting with the possibility of becoming good" (March 1988, p. 263). Discouraging experimenting will inhibit change. Although very true, this suggestion to support a technology of foolishness has to my knowledge not been taken up by members of the contemporary debate on organizational learning. Many ambitious "double loop learning" processes such as reformations, are problematic because they call for a different attitude on the part of the members, and in specific the managers. These processes could be less problematic if people are more tolerant of this experimenting.

- Treat memory as an enemy.

"If I do not know what I did yesterday or what other people in the organization are doing today, I can act within the system of reason and still do things that are foolish" (March 1988, p. 263).

Weick (1979) refers to discrediting organizational knowledge through which organizational actors treat memory as an enemy: "To doubt is to discredit unequivocal information, to act decisively is to discredit equivocal information. When things are clear, doubt; when there is doubt, treat things as if they are clear" (Weick 1979, p. 221). Discrediting may be a crucial internal source of novelty in the event that this novelty cannot be borrowed from outsiders.

Discrediting calls for experimenting and enactment. Experimenting is seen by many writers as essential to organizational learning. Less often mentioned are the opportunities newcomers provide in that they are unaware of the organizational past. The AZ case illustrates however that newcomers can only be carriers of new knowledge when the memory of the organization is not too dominant.

- Treat experience as a theory.

"Personal histories, and national histories, need to be rewritten rather continuously as a base for the retrospective learning of new self-conceptions" (March 1988, p. 263). This is a call for self-reflection: in-depth knowledge of the past may assure awareness of possible obsolete knowledge that still guides action strategies of the organization. This idea is somewhat similar to the notion of "double loop learning" introduced by Argyris and Schön (1978) and based on Bateson (1973). Argyris and Schön found their argument on a system-theoretical perspective on learning. The need for self-reflection is triggered by an inconsistency or failure. March's suggestion to treat experience as a theory goes beyond such environmental determinism: "by changing our interpretive concepts now, we modify what we learned earlier". I will return to this need for self-reflection in chapter eight.

7.2.3 Diversity

Too much homogeneity creates inertia. When every one is thinking and acting the same thing, in the same way, interpreting his or her actions in the same way, the

probability of learning new knowledge will be low.

Diversity is needed to foster variation in organizational knowledge, different perceptions of similar situations, enactment of different environments, and the occurrence of chance, serendipity, and cross fertilization. To put it differently, diversity requires anarchistic learning. Anarchistic learning has been addressed in chapter four as a form of learning that may hamper internal learning. During anarchistic learning, individuals do not act and think as organizational members because the process of internalizing organizational learning, or socialization is problematic. Anarchistic learning is not always negative. In fact, because this process of learning allows for diversity, it may very well stimulate creative learning.

Diversity is broadly defined in current management literature as including differences in race, gender, national origin, ethnicity, ability (Milliken and Martins 1996). Especially in the US, 'managing diversity' is almost considered synonymous with hiring more minorities, and particularly, more female workers⁶¹. This notion of diversity has not (yet) entered as fully within European organizations. Diversity is of course not only linked to a mixture between men and women, black and white, or able and disabled.

Here I approach diversity as differences in worldviews and identity among groups in relation to other groups.

In general, recruiting and keeping people with different (cultural) backgrounds is essential to organizations that want to promote creative learning. Through diversity of personal knowledge, different environments are enacted, new interpretations of the same situation are given, new ideas emerge, etc.

Another important source of variation is the diversity of roles. In practice, individuals often play different roles in the organizational setting (Goffman 1959). In addition to their role as an organizational member, they can play the role of mother, passenger, client, consumer, peace activist, church member etc. But also within the

⁶¹ A feminine way of thinking and acting for example differs from the male way of thinking and acting. Given that men still dominate most organizations, especially in the higher echelons, a mixture of both female and male styles of thinking and acting would create diversity. According to Handy (1995) for example, women rely more typically on intuition than on hard-nosed logic all the time. *"Women are less preoccupied with status, and prefer getting things done. In addition women are quite comfortable at handling three or four projects or events at the same time. Men tend to want to do things sequentially. Women (and men with some degree of feminine strain), also recognize that relationships are very important"* (Handy 1995, p. 379). Hiring more women may thus create more variation in organizational knowledge.

organizational context, it is possible to think of one individual being member of various (reference) groups. As Weick puts it "a person does not invest all behavior in a single group, commitments and interlockings are dispersed among several groups" (Weick 1979, p. 95).

Inclusions typify the extent to which an actor thinks and acts in a certain social (sub) world⁶², or what the configuration theorists call "social-cognitive configuration"⁶³ (Bolk 1989, van Dijk 1989, van Dongen 1991, Maas 1988, Veld in 't et al 1991). Actors are always involved in more than one social world. Inclusion in a certain configuration or social world can be more or less peripheral but is never complete (Veld In 't 1991). Weick introduced the word partial inclusion to describe partial and incomplete commitment⁶⁴.

Diversity offers both a great opportunity for organizations and presents them with some important difficulties. On the one hand, more diverse groups and people have the potential to consider a greater range of perspectives and to generate more high-quality solutions than less diverse groups (e.g. Watson et al 1993). On the other hand, the greater the amount of diversity in a group or organization, the less integrated the group will be and the higher the level of dissatisfaction and turnover (O'Reilly et al 1989). Furthermore, too much diversity complicates meaningful interaction.

Granovetter (1973), McPerson (1992), as well as Rogers (1983) have warned us about the paradoxical nature of homogeneity or 'homophily' (Lazarsfeld and Merton 1964)

⁶² In chapter eight I will elaborate on the possibility of problematic communication due to the existence of one or more reference groups.

⁶³ The primary difference between social worlds and social cognitive configuration is that the former is more focussed on reference groups to which people want to belong, whereas the latter is more directed at shared definitions of reality. I prefer the use of social words since this concept includes things as feelings, emotions, personal attraction, etc whereas the social cognitive configuration is much more cognitive oriented.

⁶⁴ The social cognitive configuration theorists prefer the term multiple inclusion because, in contrast to partial inclusion, it means that actor invest their total personality and not only part of it (Maas 1988): *"In patterns of ongoing interaction actors are always included in a plurality of social contexts. Other contexts are always present in the background. Actors can introduce definitions of reality developed in one configuration into other configurations they are included in. The process of constructing and reconstructing definitions of reality is influenced by the multiple inclusions of actors. The existence of multiple inclusions is an important source of social change."* (in t Veld et al 1991, p. 24).

within groups. Heterophilous communication may cause cognitive dissonance because an individual is exposed to messages that are inconsistent with existing beliefs. Homophilous communication is much more effective (Rogers 1993). But heterophilous communication has a special informational potential in that it may connect two separate social groups. As is implied in Granovetter's (1973) theory of "the strength-of-weak-ties", this connection is especially important in carrying innovative information.

This dynamic can be illustrated by the AZ case. Newcomers and oldtimers were members of different social worlds: the world of the professionals versus the soft-cushion world of AZ. Because these two worlds were so different from each other, no meaningful communication occurred: both groups did not (want to) understand each other.

Thus, too much diversity is as dysfunctional for change as is too much similarity.

Besides embracing differences, diversity may be enhanced through serendipity and cross-fertilization.

As Koestler remarks in his essay on the act of creation:

"The most important feature of original experimental thinking is the discovery of overlap and agreement where formerly only isolation and difference was recognized" (Koestler 1964, p. 232)

There are many ways through which serendipity and cross-fertilization enter the organization. For example, attendance at conferences where the subject is at first sight of little relevance, may be a fruitful explorative activity. The same goes for hiring external guests whose expertise differs from the major expertise found in the organization. The use of Internet-facilities, especially World Wide Web and the bulletin board facilities, is a good example of explorative information systems that promote serendipitous findings and the connection of separate disciplines. I will return to the use of information systems to promote creativity in chapter nine.

7.2.4 Informal networking

During the process of creating the Mobility Pass, a lot of informal interactions across various organizations occurred. Johnson had ties to multiple networks which he used for various reasons. For one, he needed the collaboration of actors within the travel industry in order to solve the "mobility-puzzle". Another important reason to network was

to learn **with** others. Partners were more often used as brainstorm or sparring partners than as trading partners. Network ties were used to refine loose ideas, to get inspiration for new ideas, to change existing ideas, and to get in contact with others with whom he had no ties at that point. Thus, communication with people outside the organization facilitated creative learning⁶⁵.

Inter-organizational networking can play a vital role during creative learning. By tapping 'external' knowledge, ideas and experiences get blended which can lead to new linkages and new insights (Pennings and Harianto 1992). When networking occurs in an unstructured way and partners move freely along various sources of information, unanticipated sources of knowledge may arise. This happened at Lease Co, where Johnson - like all innovation champions (Kanter, 1983) - promoted his idea vigorously through all kinds of informal processes. As a result, pieces of information flew to places where they were neither asked for nor, according to conventional wisdom, relevant. Most projects, of which only one has been described in this paper, were not planned for or even thought of; the information just moved in the form of hearsay to unanticipated places.

Similar processes were observed by Kreiner and Schultz (1993) who studied the informal collaboration of sixteen R&D departments within the Danish biotech community. To them, networking seems to embody a "technology of foolishness" (March 1988). Instead of the rational sequence of action following thinking, networking often involves the opposite. In a similar vein, Johnson's networking efforts can be seen as rational use of a technology of foolishness. His aggressive networking was a result of his belief that contacts, although not useful in the short run, can always prove to be of value in subsequent stages or projects, and that through networking he could establish a certain reputation. Whereas the motivations that laid behind this networking were rational, the actual process of networking was more one of 'thinking follows acting':

"I keep on beating the drum loud and clear. Very often, people have needs, do not

⁶⁵ It is striking to note that although Lease Co, with car leasing as its main product, is a competitor in the eyes of other actors in the public transport sector, they did not perceive each other as rivals when exploring opportunities was concerned. Clearly, this observation departs from the prevalent aggressive notion of competitive struggle (Porter 1980).

The use of actual and potential competitors in order to exchange information concerning novel designs or product ideas is not that revolutionary as it seems to be. In fact, a century ago, "collective invention" was probably the most important source of innovation (Allen 1983).

know precisely how it sticks together and go to seminars or so, seeking what can be done about it. It is a kind of cattle trade in knowledge. Most people do not read magazines like: I have a problem, let me see if there is some intellectual who has a solution. They feel betrayed by their suppliers, suppliers always come with something new. They don't want that any more, the push market is over."

7.2.5 Risk-taking

Another important ingredient of creative learning is the nourishing of risk taking and risk takers. Creative learning depends on the relation between performance and aspirations (March and Shapira 1987). Individuals tend to act in a more risk averse manner when they are above their aspiration levels than when they are below them. When operating below the aspiration level, individuals seem to increase risk taking as they fall further below the target. Risk averseness sets in at the moment individuals reach a perceived 'survival point', when they find themselves in situations in which performances are very much below the aspiration level. Above the aspiration level, risk taking seems to rise slowly with success. Thus failure (until survival is in question) and substantial success induces risk taking (Levinthal and March 1994).

It is important to note that risk taking is not only associated with failure and success, but also depends on the role of beliefs of individuals. Personal aspirations are most decisive for risk taking. Aspirations can be suggested by 'significant others' that act as reference groups, such as other organizations, superiors, etc. Aspirations are also developed through personal experiences. In such case, risk taking is not so much a result of perceived external threats or other problematic situations. Rather, past individual successes often triggers future risk taking behavior. This is primarily because successful people tend to overestimate the contribution of their ability to their success and to underestimate the contributions of risk taking and chance (Levinthal and March 1994). Such risk underestimation reinforces illusions of control. In other words, those individuals who have experienced past successes tend to engage in more risky behavior than they would if they understood the odds.

Again, the Lease Co case provides an example of this risk taking. Confirming the characteristics of IT champions (Heng et al 1994), Johnson liked to take risks and to a

certain extent ignore formal routines.

"I have my own vision about how things ought to go. They [Board of Directors, author] don't like that at all. It's accepted now, after five and a half years"... "I compare my self with the joker of the Middle Ages. In fact you may say almost everything; if you are right, it will be accepted, if you are wrong, everyone roars".

There is an increased attention within the literature on innovation toward the importance of risk takers for the broaching of innovative avenues. These risk takers have been labelled 'product champions' or 'innovation champions'(Burgelman and Sayles 1986, Kanter 1983, Maidique 1980, Schön 1963). These individuals share a certain thirst for tension and excitement that stimulates them to introduce new ideas.

We are probably all familiar with those people who have a sort of innate drive to search for or to create risky and dangerous situations. As Johnson remarked:

"You always need food also for your brains, only it depends on the way you are brought up, how to deal with the food. When you belong to the ninety-five percent of the population that were never allowed to take risks, you will never be creative. When you are within the five percent who is allowed to behave a-socially, than you will manage. When you behave as such within your professional life people react kind of jealous but they forget that I am continuously walking on a wobbly edge of being kicked out because there is no result"

As the process of idea generation of the Mobility Pass illustrated, most projects - if not all - do not succeed. In addition to the two projects described above, a lot of other ideas failed. However, it is incorrect to deem the efforts put in the failed projects as waste. Creative learning calls for embracing risk taking while failures should be regarded as part of chosen strategy. The generation of an innovation must therefore be seen as a learning process and the experiences learned by trial and error form part of the success of the innovation. This implies that organizations who promote creative learning should consider this learning by doing as an economic investment (Arrow 1962). In addition to the positive effect of knowledge building through learning by doing, contacts and friendship forged in the preparing phase of "failed" projects, may prove useful for

subsequent projects. To invest in this creative learning capacity, organizations need to change the prevalent assumption of "fighting for survival" into an assumption of learning with others.

7.3 TRAPS AND OBSTACLES DURING CREATIVE LEARNING

As I will discuss more thoroughly in the next chapter, creative learning stands on the shoulder of the other three forms of learning. Hence, conditions described in the previous chapters also apply to this form of learning. But organizations may also face inefficiencies during learning that are salient to this particular type of learning.

Although creative learning evokes images of inventing, creativity and originality, in practice its success depends considerably on prior related knowledge. In the previous chapter, the importance of the organization's absorptive capacity in order to innovate has already been discussed. In the case of creative learning, this absorptive capacity can best be described by Pasteur's famous expression "chance favors the prepared mind". Past experiences represent a rich source from which creativity may flow. New ideas do not just fall from trees, they are always based to a certain extent on prior knowledge.

The story of the Mobility Pass illustrates the importance of prior experience. The success of a previously introduced product, the Travel Card, triggered the Holding to think of ways to extend its function. This same story demonstrates the importance of existing organizational knowledge and highlights the particular nature of seemingly discontinuous (McKee 1992), radical (Burgelman and Sayles 1986) or big bang (Gluck 1985) innovations, as well as the process of double loop learning.

The process of creating the Mobility Pass can be considered a cumulative technological experience, although it would be tempting to consider the innovation as discontinuous in case it had been analyzed *ex poste*. If Lease Co had had no know-how of smart-cards, the company probably would not have thought of introducing the Mobility Pass in the first place. To summarize the argument in the words of Cohen and Levinthal (1990), Lease Co had enough "absorptive capacity" to work out the idea of the Mobility Pass.

Hence, creative learning calls for exploring the future while exploiting the past.

However, by contrast, organizations should not rely too much on past experiences. After all, the purpose of creative learning is to produce radical new knowledge. In order to reach this goal, actors engaging in experimenting should be cut off from the rest of the organization in order to be receptive to totally irrelevant ideas. This need to be isolated from the rest of the organization is also essential when we realize that the products of creative learning will only become feasible after a relatively long period of time. Given that organizations are predominantly short-term oriented, creative actors would likely be confronted with impatience on the part of management (March 1994).

The Lease Co case provides an illustration for such a situation. After almost four years searching for opportunities to extend the function of the Mobility Pass, the Board of Directors of Lease Co realized that Johnson's efforts would not yield any fruitful outcomes in the near future. One of the members of the Board talked about a "waste of time" and thought the time had come for Johnson to focus on the "regular activities as an EDP manager instead of playing around". In fact, one year after the study Johnson was asked to concentrate more on the actual internal affairs within the company.

Too much focus on creative learning on the other hand will also produce inefficiencies. Through excessive creativity, organizations may fall in a 'failure trap' (Levinthal and March 1994). Because most new ideas are bad ones, on average creative learning will lead to disappointment. And because new ideas require time to realize their value, organizations often shift to new alternatives before they develop the expertise necessary to exploit old ones. Consequently, creativity often leads to perceived failure which leads to new searches, which leads to failures, and so on (Cyert and March 1963, March and Simon 1993). In order to interrupt this cycle, creative learning should be balanced with other types of learning. In the next chapter, I will return to this issue of balancing learning.

7.4 CONCLUDING REMARKS

In this chapter I discussed processes of creative learning. Of all forms of learning processes that have been treated in this thesis, creative learning is most closely related to learning that has been labeled "generative learning" (Senge 1991), or "proactive learning" (Miles and Randolph 1980). These theories portray significant changes at the level of the

organization as an outcome of learning.

Different from these writings on organizational learning, I do not want to argue that creative learning is the best way of learning. Rather, creative learning is based on all other forms of learning described previously. For example, without learning by imitation, creative learning is hard to imagine. As Schumpeter (1934) argued, innovation is always the result of "Neue Kombinationen". Furthermore, organizations engaging in creativity without paying attention to existing knowledge within the larger environment face the danger of losing track.

In the coming chapter I will argue that the possibility of successful outcomes of creative learning, that is an increase in the breadth of organizational knowledge, depends to a great extent on the success of the other forms of learning.

PART THREE

IMPLICATIONS

In this third part of the thesis, two chapters are devoted to the implications of the ideas put forward in the previous chapters. Although it is not the intention to provide standard recipes or guidelines for organizational practitioners, some words may be said concerning the practice of organizational learning. A distinction is made between implications for organizational practitioners to promote successful outcomes of learning, and implications for the information systems discipline. By organizational practitioners, I refer to those people who are the most capable of purposefully introducing, changing or suppressing organizational learning processes. In particular, 'human resource managers', leaders, organization- and management consultants, but also organizational researchers, are referred to. To be sure, implications for the information systems discipline are of equal interest to these and other practitioners.

The implications for organizational practitioners addresses the question how to strive for 'successful' outcomes of organizational learning processes. Given that organizational learning processes are often inefficient, the question will be approached by addressing the causes of imperfect learning and attempting to show how organizations can try to avoid these causes. It will be argued that organizations strive for successful outcomes of learning by circumventing instances of focussed learning and by balancing the four types of learning.

In chapter nine, the implications for the information systems discipline are addressed. The chapter deals with reviewing the role of information systems during several information intensive processes that characterizes learning. These processes are: knowledge externalization, knowledge objectivation, knowledge internalization, information selection, information interpretation, and idea generation.

CHAPTER EIGHT

STRIVING FOR SUCCESSFUL LEARNING

8.1 INTRODUCTION

Up until this point, processes of organizational learning have been discussed theoretically without explicit reference to the possibility of achieving successful outcomes of learning, such as improvement, innovation, and intelligence. How to strive for successful learning is a particularly relevant issue when we realize that organizational learning processes are prone to various inefficiencies.

In this chapter, I will elaborate on the issue of improving learning capabilities. The general idea behind this attempt is that in order for organizations to improve their learning capacity, it is necessary to create awareness of possible learning imperfections. As soon as this awareness is brought about, there are various ways to avoid the occurrence of these imperfections.

It is tempting to solve problems by presenting an ideal type of learning. Such an attempt comes close to presenting normative descriptions such as what a learning organization should look like. This may be criticized however for being much too biased towards one particular type of organization, within one particular context. To be sure, there are no twin organizations. Prescriptions as to what learning organizations should look like may be applicable to one organization but not to others. Because the organizational past history, the idiosyncracies of organizational members, organizational institutional contexts - all these and more - affect the process of learning, time and context are important variables that may affect the learning itself. It is for example conceivable that the learning of organizations during the industrial revolution results in a different form of learning from for example organizations during the 'information revolution' (Beninger 1986) or the 'knowledge society' (Drucker 1988). Furthermore, an increase in amount of organizations within an organizational field assures a more 'aggressive' style of learning than is the case with an organization in a sparsely populated organizational field. Likewise, organizations in Sweden with their tradition of work councils will likely engender a different style of learning than do organizations in Belgium where lines of

authority are also informally kept in touch (Hofstede 1980)⁶⁶. The nature of the firm also influences the best way of learning. One-man businesses learn differently than multinational corporations.

Hence, since I do not believe there is **one** best way of learning, it is not my aim to present normative prescriptions. Another, more fruitful option that still acknowledges the idiosyncracies which characterize organizational life, is to present descriptions about when and how learning processes may or may not yield fruitful outcomes. From these descriptions some generic implications may be derived that could be of help whenever organizations want to engineer their learning process.

In the previous chapters it has been argued that organizational learning does not always result in outcomes such as improvement or intelligence. In this chapter I will consider how organizations can avoid the occurrence of these and other learning defects. This will be done by first addressing the causes of the traps and obstacles to learning that have been discussed in chapters four and five when internal learning and feedback learning were described. All these inefficiencies have to do with focussed selection, interpretation, and use of information. Given that the other two types of learning: learning from others and creative learning, are essentially information intensive processes, this so called "focussed learning" may also influence these two types of learning. After reviewing the various tendencies that cause focussed learning, I will discuss possible ways to avoid its occurrence.

Avoiding focussed learning is not the only way to improve learning capacity in an organization. In order to promote successful learning, every type of learning should make use of other types of learning. In section 8.3, I will go into every possible combination of types of learning and how this may stimulate improvement and intelligence. In an appendix at the end of the thesis, a general checklist is given that can be used to assess organizational learning capacity. This checklist is based on arguments put forward in this chapter.

⁶⁶ The differences between organizations in Japan and the US in terms of learning have been addressed frequently (Nonaka 1990, Nonaka and Johansson 1985)

8.2 FOCUSED LEARNING

The traps and obstacles discussed in chapters four and five are a result of selectively searching, interpreting, and using information. There are various tendencies that may cause this focussed learning. These tendencies hinder the introduction of variety or diversity of information and knowledge within the organization and as such result in path dependency. Path dependency is one of the most important perils of organizational learning. It is often a result of unintended conservatism. Standard evolution theory already taught us that evolution without variation will sow the seeds of destruction. The organization continues doing what it always did without looking for alternative courses of action⁶⁷.

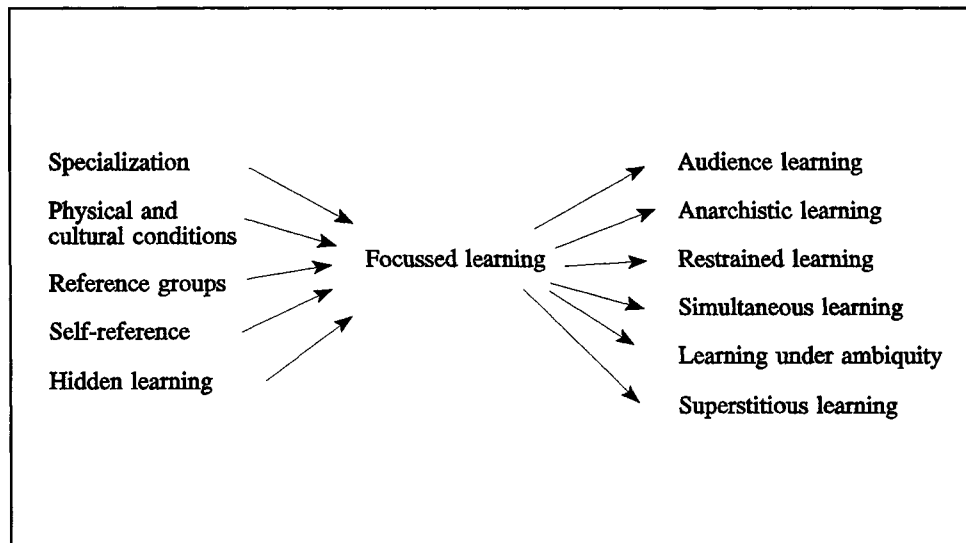


Figure 8.1 Causes and effects of focussed learning

Below I will discuss five tendencies that cause focussed learning: specialization, physical and cultural conditions, self-reference, reference groups, and hidden learning. Figure 8.1 depicts the relationship between the causes and effects of focussed learning. Section 8.2.6 deals with other possibilities than sheer awareness of its occurrence, for avoiding focussed learning.

⁶⁷ Path dependency may also be the result of unintended chaos. This may occur when there is an overreliance on experimentation without capitalizing on the experience gained through experimenting.

8.2.1 Specialization

Because of specialization among individual employees and among organizational units - departmentalization -, individuals perceive their environments differently. This selective exposure to environmental stimuli affects the information that various members receive: "Salesmen live in an environment of customers; company treasurers in an environment of bankers; each sees a quite distinct part of the world" (March and Simon 1993, p. 175). Through the division of work "perceptions of the environment are biased even before they experience the filtering action of the frame of reference of the perceiver" (March and Simon 1993, p 174).

Selective exposure induced by specialization assures the persistence of sub-goals and the interpretation of environmental responses in terms of these sub-goals. Because units or individuals think in pieces instead of wholes, the possibility of perceiving environmental action which is less relevant to ones own segment though perhaps relevant to others', is kept to a minimum (Senge 1992). Railway drivers sporadically meet managers (Edel 1996); consultants are asked to plan a day to meet their fellow colleagues (Peters 1992); salesmen seldom talk to marketing people (Senge 1992).

System theorists have devoted considerable attention to the problem of selective attention. For system theorists, a source of poor performance and organizational failure is often to be found in the limited cognitive skills and capabilities of individuals when set against the complexity of the systems they are addressing (Forester 1961, Galbraith 1973, Perrow 1986, Senge 1992, Simon 1977). Most if not all of these system thinkers perceive selective exposure as a result of specialization. In addition to system-theoretical considerations, cultural and physical conditions may also produce selective exposure.

8.2.2 Physical and cultural conditions

Most communication in organizations is informal and takes place for example in the coffee corner, during lunch hours, on the way to the office, or when popping in at the office of colleagues. Physical as well as cultural conditions may however block the occurrence of such unexpected encounters. At AZ for example, it was one of the unspoken rules not to talk informally with each other, at least not when the boss was walking around. Consequently, most informal communication occurred behind closed

doors and more importantly was almost restricted to those people who shared an office with each other. Aside from the fact that these people only occasionally talked informally to their fellow-colleagues, they seemed to strictly avoid contact with superiors. Again, this was one of the unwritten rules at the department: managers only talk formally with their subordinates. In fact, old-timers perceived some newcomers who had not internalized this rule, as always on the make, doing everything to get higher up in the hierarchy.

There were also structural hindrances at AZ to informal communication. Offices were located on two sides of a very large and narrow corridor. Except for the lunch room downstairs, there was no possibility for employees to meet and talk to each other informally. Although there was indeed a common coffee-machine, this machine was located in front of the office of the manager. Given the hierarchical culture at the department, this was not exactly an ideal place for an exchange of ideas and opinions. Hence, physical and cultural conditions may limit the scope of information to which one is exposed.

8.2.3 Reference groups

Selective attention and interpretation of information can also result from ones membership in different social groups⁶⁸. Membership in social groups may influence how an organizational member determines what information to interpret, how to interpret it, and how to use it.

In this thesis, the concept of reference groups is used when dealing with social groups. Reference groups are the source of a person's aspirations and evaluative beliefs. They can be seen as groups whose perspective is used as a frame of reference by the actor (Shibutani 1955). This notion stems from symbolic interactionist thinking with Herbert Mead as its intellectual father. Symbolic interactionists argue that the self, that is ones own identity, emerges through the process of social interaction with others. People imaginatively internalize attitudes of the reference group to which they want to belong. People, according to Mead (1934), tend to "take the role of the generalized others",

⁶⁸ Here we meet social psychological theory. Social psychology is the study of how people think, feel, act and learn when they are with others, or when they have others in mind (Hosking and Morley 1991).

meaning that each person approaches his world from the standpoint of the shared perspectives or frame of reference of the group.

An important feature of reference groups is that these groups are not necessarily bound by geography or formal membership "but by the limits of effective communication" (Shibatuni 1955, p. 566). All kinds of groupings, with great variation in size, composition, and structure, may become reference groups. Their formation may be attributed to some social category - a social class, a community, an ethnic group, or to groups in which people participate directly - a work team, an occupation. A reference group may also be imaginary, as in the case of artists who are "born ahead of their times".

Groups determine the expectations and interpretations of people's activities. The amount of cohesiveness in these social groups is largely a function of the degree of corresponding interpretive schemes. Strong group cohesion creates a situation of 'cognitive consensuality' which could be defined as "a reasonable amount of implicit agreement among organization members as to the appropriate meaning of information or events" (Finney and Mitroff 1986 p. 320). Cognitive consensuality may foster a group atmosphere in which people take too much on trust and suppress their personal doubts about what is being said. Janis has called this 'group think'. People are likely to persuade themselves that their "misgivings are not relevant" and that "the benefit of any doubt should be given to the group consensus" (Janis, 1972, p. 201) In the case where individuals are hindered from putting their beliefs into action, a kind of group think may emerge which promotes 'restrained learning' as discussed in chapter four. Group think may also influence learning under ambiguity when people attend to information and interpret this information according to the group norms.

The AZ story illustrates that reference groups may seriously block introduction of knowledge that does not match the general frame of reference of the group. System designers either belonged to the AZ culture and tradition or to the professional world of software houses. The latter group of designers, at least at the beginning, reacted to actions of the old-timers by pointing to other - in their eyes - more improved ways of working. These efforts had no result, mainly because the gap between the two social worlds was too big.

8.2.4 Self-reference

Another important source that may influence learning is self-reference. The concept of self-reference is derived from the theory of autopoiesis (Maturana and Varela 1980) and has been used by Morgan (1986) as one of his metaphors to analyze organizational behavior.

The term 'autopoiesis' stems from the Greek αὐτός (self) and ποιεῖν (to make). The theory is a new approach to systems theory since it challenges the traditional distinction between a system and its environment. It also provides a new perspective on the evolution of living systems. One of the principle features of the theory is the concept of 'self-reference'. Self-reference means that systems make reference only to themselves. That is, elements of the system interact only with other elements of the system. The system cannot interact with elements outside itself because these are not specified. Thus, a system's interaction with its "environment" is really a reflection and part of its own organization. It only perceives the environment as a projection of its own identity. Because of this self-reference, the evolution of living systems is characterized by self-production.

In his book "Images of Organizations" (1986), Morgan discusses the theory of autopoiesis from an organization theoretical point of view. He uses the theory of autopoiesis for his "flux and transformation" metaphor, which deals with the logic of transformation and change for the basic dynamics that generate and sustain organization⁶⁹. This metaphor provides a totally different idea about the distinction between organization and its environment.

Traditionally, organization theory treats environments as exogenous, whereas the organization is supposed to act adaptively in order to respond to environmental signals. Organizations are considered open systems continuously trying to adapt to changing environments. The theory of autopoiesis, by contrast, provides a picture of organizations as being closed systems. This closedness should not however be taken too literally.

⁶⁹ The use of this metaphor is appropriate, but not the only possibility. Autopoiesis does deal with change and reproduction of systems, it also deals with maintaining its own identity and psychology. Consequently, the theory of autopoiesis might be of use for Morgan's "psychic prison" metaphor as well. Because the theory originates from biology, it would also be of use for the "organism" metaphor.

Organizations do have environments, but their relations with environments are internally determined. This notion of endogenous environments is similar to the idea that organizations enact their environment: environments are socially constructed and come into being by giving meaning to it (Weick 1979). Although enactment is usually considered a process of development, it "encourages us to view organizational enactments as part of self-referential process through which an organization attempts to tie down and reproduce its identity" (Morgan, 1986 p. 241)⁷⁰.

Although not discussed by Morgan (1986), the theory of autopoiesis has also promising potentials when used as a metaphor to analyze organizational learning processes (Huysman et al 1995). Used in this fashion, a self-referential image of learning arises, implying that organizational learning is biased by the existing organizational identity. This identity operates as a filter by defining what history and "outside" events are considered relevant in order to draw conclusions from them. Because of this 'structural coupling', learning is self-referential: the object of learning is related to what is already known or at least understandable. This self-referential learning can also be seen as what Schön (1971) described as 'dynamic conservatism': a tendency to fight to remain the same.

There is some overlap with the existence of reference groups as sources for learning under ambiguity. For example, both deal with the dominance of (group) identity in attending to environmental demands. However, whereas the concept of reference groups is directed at significant others, self reference is related to ones own identity. Furthermore, the theory of autopoiesis used as a metaphor to explain focussed learning argues that the identity of the group or organization is important not so much in **interpreting** the environment but in **creating** the environment. When self-reference is considered a source of learning under ambiguity, it is assumed that the individual stays within his or her existing frame of reference and chooses environmental responses that confirm this frame of reference. The pictures of environmental responses formed by each employee are representations of reality created through self-referential mental processes, rather than objective pictures of 'reality itself' (Westenholz 1993). This does not necessarily mean that there is no existing reality, rather it implies that we construct

⁷⁰ Enactment can be both creative as well as conservative. I will turn to the first aspect of enactment when discussing learning by exploration. For now, I will address the conservative side of enactment is addressed.

pictures of the world that decisively shape our world view. People create these pictures to defend their identity but at the same time "these pictures become a prison into which we are locked, so that we cannot view the world afresh" (Westenholz 1993, p. 39).

Hence, organizational learning may take place within the limits of the existing mind-sets. Because these limits are the very means by which the information is interpreted as meaningful, individuals will not be capable of challenging these limits⁷¹. In other words, organizations tend to learn from an ego of themselves. Superstitious learning is a conspicuous result of egocentrism. Because the organization perceives itself as being in the center, environmental changes are often interpreted as being caused by organizational action. This egocentric learning may be successful in the short run, but it often occurs at the expense of strategic success in the long run. In this sense, autopoiesis as a theory of self-creation of systems also has implications for self-destruction of systems.

For instance, at the beginning of the commercialization process of the Dutch Railways, managers addressed complaints of passengers by interpreting them from a technological frame of reference. Becoming more client-oriented was explained in terms of improving the quality of railroad equipment instead of improving customer-related services. Because operating trains was seen as their main mission instead of carrying passengers, managers translated the information from a technological viewpoint⁷².

8.2.5 Hidden learning

Learning processes often occur unnoticed (e.g. Brown and Duguid 1991, Ciborra and Lanzara 1994). This is mainly because the actual processes in which organizational knowledge is constructed or restructured occurs during non-canonical work practices (Brown and Duguid 1991). For example, organizational members adjust their work

⁷¹ This 'dynamic conservatism' is similar to the concept of single loop learning (Argyris and Schön 1978). Whereas single loop learning occurs within the existing frames of references, double loop learning questions these guiding principles. The difference with the 'autopoietic perspective' lies within the attributed origin of this conservatism. Whereas Argyris and Schön argue that defensive routines are the main obstacle, the autopoietic images consider self-reference as the main barrier to significant changes. Furthermore, single and double loop learning are constructs that refer to the outcome of learning whereas the autopoietic perspective on organizational learning directs the attention to the action process of learning.

⁷² Students attending the course on Organizations and Management, september - december 1995, have analyzed cognitive change and problems of organizational learning at the Dutch Railways. See for a review of results of this course (Edel 1996).

routines in order to remain aligned with their enacted environments. Because management is focussed too much on canonical practices, it is often unaware of the actual learning that is situated in day to day interactions.

The consequence of hidden learning is that the organization engages in audience learning as discussed in chapter four. Audience learning occurs when the organization assumes it learns from the actions of the organizational members albeit in practice they learn from what they assume is happening within the organization. As a consequence, the link between the actual learning practices, and that which is considered as learning practices, is severed. As will be argued in section 8.3, this in turn may have consequences for the organization's ability to innovate. Because actual noncanonical practices have a practical rather than a formal connection to the world, they are continually developing new interpretations of that world (Brown and Duguid 1991).

In addition to managers, members of non-canonical communities too are not always aware of their (re)construction of organizational knowledge (Ciborra and Lanzarra 1994). Because their personal activities are so much integrated in their day to day context, they could become blind to changes at the level of the group or organization that their actions bring about.

8.2.6 Avoiding focussed learning

Avoiding focussed learning requires first of all an understanding of its possible origins. Next to sheer understanding, focussed learning may also be avoided by improving the communication between organizational members and between organizations. Furthermore, avoiding focussed learning calls for an awareness of tendencies that result in selective search and interpretation.

- Communication

As will be argued in chapter nine, imperfect communication as a result of specialization and physical conditions can be reduced by improving the communication between the various units through for example the use of e-mail and Intranet. Job-rotation is also a way to reduce the occurrence of problematic communication due to job-division. In general, organizations should try to incorporate redundancy within the organization. Redundancy assures a certain overlap of knowledge which is believed to be productive for

learning (Cohen and Levinthal 1991, Nonaka 1990). According to Nonaka (1990), many Japanese firms have incorporated redundancy in their actions in order to stimulate knowledge creation. Redundancy assures more conversations and communication which contributes to the emergence of a 'common cognitive basis' which enables the transfer of tacit or implicit knowledge. Because organizational members exchange overlapping information they are better able to sense what others try to put into words.

Simultaneously, the possible occurrence of self-referential information use, and the dominance of reference groups as groups that influence the interpretation, calls for more diversity within the organization. Diversity is needed to interpret information in different ways and to consider alternative environments as models to imitate.

A mixture between redundancy and diversity may be acquired by adjusting the design of organizational architecture as well as the ways groups and individuals are linked to each other. This architecture should acknowledge and even promote a certain level of autonomy of units. Members of communities should be able to develop their independent individual beliefs instead of adapting too fast to organizational routines. In other words, the design should allow for some degree of diversity gained through anarchistic learning.

At the same time, the design should also allow for an interconnectedness through which the results of actions and beliefs of separate communities are able to spread. This requires enabling the circulation of stories (Brown and Duguid 1991). Computerized information systems may support this exchange of narratives, for example through Intranet.

In themselves, Intranet and Internet provide promising possibilities for avoiding self-referential use of information while at the same time they enable overlap of information. Organizations and organizational members externalize their knowledge so that it becomes public. Because of this externalization, more understanding and knowledge is gained about the dispersed experiences within the organization. Simultaneously, Intranet and Internet are information-monitoring systems instead of an information-analysis systems (March 1994). As a result, using the system may produce surprises and serendipitous findings which counterbalance self-reference. I will return to this issue in chapter nine.

- Self-awareness

The revelation of hidden learning, cultural conditions, self-referential forces and the predominance of reference groups, also require self-awareness.

Self-awareness creates understanding of existing organizational knowledge and of the actual learning practices that may (re)construct this knowledge.

Self-awareness takes place through self-reflection⁷³. In the literature on organizational learning, self-reflection is mostly portrayed as a deliberate kind of learning in which psycho-therapy serve as an interesting metaphor⁷⁴ (Argyris and Schön 1978, Swieringa and Wierdsma 1990). As in psycho-therapy, self-reflection involves the process of becoming aware of ones personal history. In order to 'heal' patients, the therapy is meant to bring feelings of which the patient is unaware into conscious awareness. Reflection is the basic technique of psychotherapy in which the therapist helps the client reflect on his or her emotions to clarify his or her feelings. Likewise, within organizations, this reflection can take place through the intervention of a 'therapist' or a 'third actor' (van Dongen 1991). Although insightful, this metaphor has some limitations in that it focusses heavily on curing organizations as the *raison d'être* for organizational learning, whereas here it is argued that there can be many other reasons for organizations to learn⁷⁵.

Again, organizations should not be too self-aware. Sometimes, situations require foolishness. Trying to be aware all the time of what knowledge exist within and outside the organization could limit the occurrence of pleasant surprises. Moreover, too much self-reflection might result in situations in which organizational members interpret information from collectively agreed upon viewpoints. In their most extreme form, shared frameworks are important barriers for change and innovation (Raesfeld-Meyer, von et al 1996)

⁷³ Whereas self-reflection is usually connected with 'higher level' learning (Argyris and Schön 1978), here it is argued that self-reflection is needed during all types of learning, ranging from internal learning to explorative learning.

⁷⁴ To be more precise, this concerns humanistic psychotherapy such as client-centered therapies (Rogers 1951).

⁷⁵ Self-awareness through self-reflection may result in unlearning (Hedberg 1981). Just as individuals sometimes need to unlearn negative feelings and behaviors, organizations too may face the need to unlearn obsolete knowledge. Hedberg (1981) defines unlearning as "a process through which learners discard knowledge" (p. 18). Unlearning may open the way of new learning to take place. The reasoning is analogous to Kurt Lewin's (1951) idea that organizational change can best be implemented if a felt need for change is first created, if an "unfreezing" occurs.

Self-reflection technologies - the use of dialogue sessions (Bohm 1990), stakeholder analysis (Mason and Mittrof 1981), or the use of Group Decision Support Systems (e.g. Boland et al 1994) - are able to promote self-awareness. But it can also be enhanced with the use of ethnographic studies (e.g. Roth and Senge 1996). Because of the subtle and hidden nature of most learning processes, thick descriptions of day to day work practices done by 'external' researchers could reveal the elusive and unpredictable character of self-awareness⁷⁶.

The possibility that actors become aware of changes depends heavily upon the degree of cognitive openness and vulnerability of the actors themselves. It can also depend on what the system allows, "or, in the words of the poet Keats, on the degree of *Negative Capability* they (the actors, MH) are equipped with, that is the capability 'of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason" (Ciborra and Lanzarra 1994, p 25).

Indeed, fluctuations often go unnoticed because organizational knowledge which has proven successful in the past and stimulates actors to unreflectively perform their routines. Even when novelties or other changes destabilize these frames of references, actors stick to their old ways, showing limited individual learning skills (Ciborra and Lanzara 1994). Negative capability is indeed a quality that management and the old-timers at AZ seemed to lack. The new professional routines brought in by the new group of system designers was almost ignored instead of being used to question the status quo in order to change the general organizational routines (Argyris and Schön 1978).

Negative capability can only help to avoid focussed learning when there is some degree of trust between the various organizational actors.

Mayer, Davis and Schoorman (1995) define trust as:

"the willingness of a party to be vulnerable to actions of another party based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party (p. 712).

⁷⁶ The Xerox Palo Alto Research Center and the Institute for Research on Learning in Palo Alto, CA, conduct a lot of anthropological research on organizational practices.

Consistent with this definition, trust can be considered as the countervailing force of fear that may be the result of the wielding of power (Webber 1993)⁷⁷.

Self awareness requires that members are willing to be vulnerable with colleagues including subordinates and superiors (Schein 1992). Consequently, some level of trust is needed in order to stimulate self-reflection which then can prevent focussed-learning.

The idea of trust as being of crucial importance in organizational life is growing in popularity within management and organization literature (Fukuyama 1995, Handy 1995, Mayer et al 1995, Peters 1992, Porter 1990, Webber 1993). The notion that a minimal level of trust is needed during situations of learning in order to increase understanding of the "theories in use" was first propagated by Argyris and Schön (1978) and was made more explicit by Argyris (1985, 1990), Dodgson (1993a) and Moingeon and Edmondson (1996).

Trust is very difficult to achieve. Tom Peters (1992) as one of the many authors who advocates trust within organizations, devotes a chapter in his book "Liberation Management" to it: "The Missing 'X-factor'". Peters' explicit attention to the necessity of trustful relations notwithstanding, he is not able to explain in depth the absence of trust within organizations and how to promote it. Charles Handy, as another contemporary trust-champion (1995), believes that an important aspect of trust lies in the size of the group of people working together as well as its more or less enduring character⁷⁸.

Like too much self-awareness, too much trust will not be beneficial. Suspicion for example may subdue the occurrence of 'group-think' (Janis 1972). Furthermore, groups that are characterized by mutual trust are likely to become too homogeneous.

In short, avoiding focussed learning requires first of all an understanding of its origins. Such an understanding in turn facilitates its avoidance. Focussed learning can also be bypassed by increasing the level of communication through a combination of diversity

⁷⁷ Trust should not be considered the opposite of power. In fact, by trusting someone, one may allow the other to use power over the other.

⁷⁸ This need for trust is becoming increasingly important as professionals and knowledge workers more and more replace blue collar workers. Because of their professional expertise, these knowledge workers know much more than their management. Consequently, managing through means of control is becoming increasingly irrelevant whereas trust becomes the most relevant alternative for organizations to exploit the knowledge of its members. This need for trust becomes almost a necessity within 'virtual' or network organizations (Handy 1995, Peters 1992).

and redundancy, and increasing the level of self-awareness, combined with negative capacity and trust within the organization. In the next chapter, I will elaborate on the possibilities of information systems to avoid the occurrence of focussed selection, interpretation and use of information.

8.3 UNBALANCED LEARNING

Avoiding focussed selection, interpretation and use of information is not the only prerequisite to stimulate successful learning. As mentioned frequently in part two, successful learning also requires balancing the various types of learning. In chapters four to seven, four types of learning were discussed separately. This was done to provide conceptual clarity. In practice, the four types of learning need to be integrated in order to improve organizational learning capacity. Table 8.1 outlines various mutual dependencies. Reading from left to right, the four learning processes represent the process of learning that is the focus of attention, because for example it is dominant at that time or because it will be dominant in the future. The columns, reading from top to bottom, represent the learning processes that contribute to these dominant learning processes. Below I will further explain the content of all twelve cells.

Using feedback information to advance internal learning (cell 1)

As a result of the closed character of internal learning, unintended conservatism is a conspicuous phenomenon during this type of learning. Since the organization only learns from existing experiences, its chances of survival are pretty low if it relies solely on this type of learning. As mentioned, internal learning is only a conceptually useful construct since it emphasizes the construction of organizational knowledge within a closed systems. The organization learns from its own experiences without paying attention to any environmental reaction that this learning could bring about. Consequently, learning results in path dependency. The organization continues doing what it always does, ignoring signals from the environment that may alert the organization to change its current behavior. The obvious answer to this problem is first of all to allow for feedback from the environment.

	B: Learning processes as part of (A)				
		internal learning	feedback learning	learning from others	creative learning
A: Learning processes	internal learning	X	1. avoiding path dependency	2. avoiding path dependency, promoting mutual learning	3. avoiding path dependency, promoting anarchistic learning
	feedback learning	4. interpreting feedback information as intended	X	5. avoiding path dependency, interpreting feedback information more thoroughly	6. exploring feedback information
	learning from others	7. assimilating external knowledge, avoiding too much dependency	8. avoiding needless institutional imitation	X	9. capitalizing on absorptive capacity
	creative learning	10. creating a "prepared mind"	11. dangerous relation	12. dangerous relation, stimulating "new combinations"	X

Table 8.1 Mutual dependencies of the four types of learning

Using experiences of others to advance internal learning (cell 2)

To avoid path dependency, internal experiences gained through internal learning may also be complemented by the experiences of other organizations gained through the learning from others. This integration of internal and external experiences may happen unnoticed, for example as was the case with the entrance of professionally trained system designers at AZ. These newcomers had learned their occupational routines through their education and previous work experiences. In other words, by hiring these newcomers, external knowledge of other organizations was introduced.

The case story also illustrated the necessity of being aware of the intertwining of various learning processes. Since management overlooked this knowledge potentiality, the information system design section was a victim of unconscious conservatism due to ignoring experience from others while learning from existing experiences.

This situation highlights the importance of balancing mutual learning. During the socialization of individuals to the existing organizational routines, people adapt to the organizational knowledge as they become organizational members. This learning should however be balanced with processes of learning from others in order for the organization to learn simultaneously from the new knowledge that individuals may introduce. As March (1991) argues, organizations are inherently conservative and tend to learn slower than newcomers. Speeding up the learning process of organizations or slowing down the learning process of newcomers implies for example a change in training and socialization practices.

Using creativity to advance internal learning (cell 3)

Path dependency may also be bypassed when creative learning forms part of internal learning. The surfacing of private experience can for example be complemented by creative learning processes when one is forced to perceive his or her own experiences and that of others from different angles. As will be argued in the next chapter, information technologies such as Groupware may support this process. Creative learning should also complement internal learning so as to allow for a certain degree of anarchic learning, as discussed in chapters four and seven. In the course of day to day activities, individuals may produce new insights that depart considerably from the existing organizational knowledge (Brown and Duguid 1991). If management overlooks this process, it cuts itself off from major sources of creativity and innovation.

Using past experiences to advance feedback learning (cell 4)

During feedback learning, the organization learns from its own experience by adapting to environmental demands. Universities, for example, learn to adjust their curriculum; governmental agencies learn to change their policies. Feedback learning will likely be more fruitful when it stands on the shoulders of successful internal learning. For without an awareness of their own experiences, organizations do not know to which environmental reactions they should adapt and or how to adapt to them. This is needed to overcome instances of superstitious learning during which the organization learns from the environmental reactions while these reactions are not dedicated by the organizational actions but by other exogenous events. Awareness of past experiences may improve the understanding of the relationship with the environment. Awareness of the organizational idiosyncratic knowledge is also needed to avoid 'learning under ambiguity'. Furthermore, this awareness will increase the understanding of the existing patterns and frames of interpretation.

Using experiences of others to advance feedback learning (cell 5)

Feedback learning can also be liable to unintended conservatism since the selection of - enacted - environments is often a derivation from the past. The next type of learning that has been distinguished: learning from others, may to a certain extent limit the occurrence of this form of unintended conservatism. With learning from others, new knowledge is diffused and adopted. The organization does not learn from its own experience but from the experience of other organizations.

Furthermore, integrating experiences of others while adapting to feedback information is also needed to interpret the information more thoroughly. When for example, organizations scan their environments through organizational benchmarking, they become more knowledgeable what 'fellow' or 'rival' organizations are doing or planning to do. Such an understanding could be of importance to interpret feedback information. To illustrate this point, a change in customer demands could be interpreted as an organization specific complaint in which case the organization would likely react by adjusting its current actions. The same change in customer demands could also be interpreted as a more structural change of customer demands in general, irrespective of the actions taken by the organization. Consequently, when organizations are more aware of their environments, the occurrence of so called 'superstitious' learning that is a conspicuous

trap of feedback learning, may be reduced.

Using creativity to advance feedback learning (cell 6)

Path dependency as a result of feedback learning may also be bypassed when aspects of creative learning are integrated in the process. As such, organizations explore with the feedback information in order to learn more about their environments and what demands there exist or will exist. Data-warehousing for example is a technology well designed to support this creative feedback learning process. Through data warehousing, organizations are able to explore the data that has been gained from their environment - in most cases its customers - in order to search for new combinations and possible gaps in the present supply. Another possibility is to explore various interpretations that can be given to the same feedback information. In the next chapter, I will discuss the potentials of Group Decision Support Systems to support this process.

Using past experiences to advance learning from others (cell 7)

In order to enable efficient assimilation of external knowledge with the existing organizational knowledge, the learning from others should be complemented by successful outcomes of internal learning. As mentioned in part two, the absence of prior related knowledge is an important obstacle to successful outcomes of learning from others. As many innovation writers have argued, successful innovation depends not only on the knowledge that is diffused from outside the organization but also on the existing organizational knowledge (e.g. Sahal 1991, Rosenberg and Fristak 1985).

A study of the history of SABRE airline reservation system (Copeland and McKenny 1988) shows for example how its success has been a result of cumulative experiences and the difficulties competitors faced in imitating the system. Copeland and McKenny refer to the notion of "intelligent persistence".

"Intelligent persistence leads to invaluable experience not easily imitated by rivals. Firms that begin to ride an experience curve ahead of their competitors realize a head start that will endure as long as new opportunities continue to be revealed. Technology can always be purchased, but the same can rarely be said for knowledge" (Copeland and McKenny 1988, p. 368).

Another example that highlights the problematic relation between the learning from others and internal learning is the contemporary trend of organizations to outsource competencies that do not belong to the organizational core. When business activities are delegated to external independent organizations, organizations learn from these independent organizations whenever they purchase services or products. Many organizations for example have decided to contract out their information systems design and development activities to consultancy firms. This outsourcing can be a dangerous activity in the event that the organization itself may not have sufficient expertise about these cut off activities. In other words, a paradoxical situation arises since organizations mostly outsource activities simply because they do not have the necessary expertise to perform the activities in house. In such cases however, consultancy firms become rich not so much because of their expertise in itself but more because they are the one-eyed man in a country of the blind. Table 8.2 shows this problematic relationship.

		Internal expertise	
		Low	High
External expertise	Low	disaster	seldom happens
	High	likely to succeed but expensive	successful

Table 8.2 External and internal expertise in relation to outsourcing knowledge

Using feedback information to advance learning from others (cell 8)

When organizations learn from the experience of others without being aware what effects their own actions may have on their environments, they may become victims of the power of institutionalized forces. An organization for example may want to become commercialized because this is a trend within the relevant field (Scott 1983). This willingness to 'go with the flow' may however be independent from the actual needs within its environment, such as clients or customers. Forssell (1989), for example, insightfully illustrated the problems a banking company was facing when it was striving to commercialize while ignoring the actual needs of its customers.

In a similar vein, the present urge of many organizations to respond quickly to the

latest trends within the ever changing world of information technology, often goes beyond the actual demands of the environment (Davenport 1996).

Using creativity to advance learning from others (cell 9)

Overreliance on experiences of other organizations may also result in unintended conservatism. The past success of imitating other organizations for example, will likely enforce future patterns of learning. Past success will negatively influence the probability of considering alternative models to imitate (Levitt and March 1988).

Balancing this type of learning with aspects of creative learning could diminish this probability. Through successful outcomes of creative learning, for example by R&D units, the width of the existing organizational knowledge is extended. When the gains from creative learning are efficiently diffused within the organization, the absorptive capacity of the organization to locate and assimilate external knowledge will increase (Cohen and Levinthal 1990). In such a case

"the investment in irrelevant fundamental knowledge is not directed primarily towards making discoveries or inventing new policies but to developing the knowledge base required for profiting from policies and discoveries made by others" (March 1994 p 247).

For example, experimenting with chipcard technology that occurred in the beginnings of the nineties at LeaseCo had created a certain absorptive capacity which helped facilitate recognition and understanding of trends within the world of chipcard technology. Without this past exploratory experience, Johnson would probably not have been triggered by other actors in the field of business travel and chipcard technology to connect both worlds and to explore the possibilities of a 'Mobility Pass' as a new service of LeaseCo.

Using past experiences to advance creative learning (cell 10)

Outcomes of internal learning, or awareness of past organizational experiences, can be helpful during creative learning. Outcomes of internal learning are also needed to create, in the words of Pasteur, a prepared mind that favors fortune. Or as Simon (1985) puts it:

"It is the surprise, the departure from the expected, that creates the fruitful accident; and there are no surprises without expectation, nor expectations

without knowledge" (p. 11).

This relationship implies that those who engage in exploration, or experimenting should be aware of the past organizational experiences.

Using feedback information to advance creative learning (cell 11)

In contrast to all other linkages, the relationship between creative learning on the one hand and elements of feedback learning on the other, is a dangerous one. During creative learning it is best to be cut off from feedback information since feedback information is most often negative in the short run (March 1991).

This implies that at the moment creative learning takes off, organizational members should be brought in some degree of isolation from day to day activities. Combining this implication with the previous implication that members engaging in creative learning should have some knowledge about the past organizational experiences, suggests that creative learning should not be reserved to a group of people that are totally separated from the organization.

Using experience from others to advance creative learning (cell 12)

What has been said about balancing creative learning with feedback learning also applies to creative learning and learning from others. This idea is marked by Polanyi's comment on one of his contributions to physics:

"I would never have conceived my theory, let alone have made a great effort to verify it, if I had been more familiar with major developments in physics that were taking place. Moreover, my initial ignorance of the powerful, false objections that were raised against my ideas protected those ideas from being nipped in the bud" (Polanyi 1963, cited by March 1991, p. 85)

Hence, in some cases of learning, ignorance can be a blessing.

But besides this dangerous relation, creative learning may also benefit from outcomes of imitation processes. Learning from others often stimulate new creative avenues by combining existing knowledge with new knowledge (Koestler 1964). Schumpeter for example argued that major innovation are very often a new combination of existing ideas. As will be discussed in the next chapter, Internet provides interesting opportunities to create new ideas through combining experience that is made public by other actors.

In sum, treating organizational learning as consisting of only one or two forms of learning may result in imperfect learning such as path dependency. Efforts to promote successful outcomes of organizational learning therefore call for a delicate balance between the various forms of learning.

The question how to balance learning has been deliberately omitted.

This balancing process is definitely not a straightforward endeavor. Standard guidelines that could serve as early warning signals as to alert the organization that the ongoing learning process should be balanced by other forms of learning, are not easy to give. There is no standard rule that tells organizations when to engage in for example more imitation or more creativity. Judging the issue of balancing depends on an awareness of:

- 1) the type of learning that is most dominant at the moment;
- 2) the conditions that facilitate and hinders this particular type of learning, as mentioned in section 8.2;
- 3) the possibilities of incorporating aspects of other types of learning⁷⁹.

In general however, given that organizations have the inherent tendency to be conservative, many organizations would improve if they devoted a disproportional amount of attention to exploration (March 1991).

As mentioned in chapters six and seven, exploration by means of creative learning and learning from others depends on the availability of slack resources in terms of money, experience, skills and external contacts.

Money is needed to facilitate experimenting. Besides size and time, economic conditions which facilitate experimenting can also be subject to institutional constraints or supports. For example, exploration is facilitated in institutional set-ups where R&D expenditures can be deduced by means of governmental tax regulations.

Slack resources in terms of experience are needed to increase absorptive capacity of the organization (Cohen and Levinthal 1990). A diversity in knowledge gained in the past may facilitate learning from others as well as creative learning.

In addition to diversity in experience, slack resources in terms of a diversity of

⁷⁹ In appendix I at the end of the thesis, a checklist is presented with general guidelines that may, amongst others, alert organizations to unbalanced learning processes.

skills may also stimulate exploration. Given that foolish behavior may result in the long run in innovation, recruiting and embracing a small group of people with totally different backgrounds in terms of experience, culture, education etc. enhances the balancing of learning.

Finally, slack resources in terms of external contacts enable complementing learning with the experiences of others. Access to a diversity of informal networks for example, increases the possibility to use a variety of learning models as sources to imitate.

8.4 CONCLUDING REMARKS

In this chapter, implications are given derived from theoretical arguments put forward in part two of this thesis. I have deliberately chosen to remain rather general while addressing their practical significance. As mentioned in the introduction of this chapter, ready made guidelines may fit one organization but can be inappropriate to promote successful learning at other organizations.

The implications are mainly useful when an organization wants to assess its current learning behavior although they may also be of use in case the organization is planning to learn in the future. Appendix I at the end of this thesis, provides a checklist that can be used to assess the learning capacity of organizations. This checklist is a summary of the implications mentioned in this chapter.

The implications can be reduced to four steps that should be taken whenever organizations want to assess its current or future learning capacity:

- 1) Understand underlying dynamics of learning as described in part two. After all, as we come to understand learning processes better, we can also better assess their intelligence and efficiency.
- 2) Be aware of the possible learning processes that currently occur within the organization or that will be of relevance in the near future. Since without such an understanding, it is impossible to manage the process.
- 3) Avoid as much as possible the occurrence of focussed learning and path

dependency by enhancing diversity of information.

- 4) Balance the various types of learning so as to promote successful outcomes of every type of learning

Improving the learning capacity of organizations, can further be enhanced through the use of information systems as tools to support the (re)construction of organizational knowledge. In the next chapter, I will discuss the role of information systems in a learning environment. This will be done by focussing on the various information intensive processes that characterize, while analyzing the potentials for supporting these particular processes with the use of information systems. Attention is also paid to the possible negative impacts current information systems may have on organizational learning processes.

CHAPTER NINE

INFORMATION SYSTEMS AND ORGANIZATIONAL LEARNING

9.1 INTRODUCTION

Organizational learning is an information and knowledge intensive activity. It is therefore necessary to discuss as part of its implications how information systems can be helpful in supporting successful outcomes of organizational learning. Consequently, in this chapter the role of information systems will be deduced from the theoretical arguments put forward in previous chapters. I will analyze in what way information systems may enable or hinder this striving for successful learning. The reader should be warned however that the chapter lacks any reference to the design of these systems. Although this may very well be of interest to organizations, I preferred to focus on the social aspects of information systems rather than the technical aspects.

Information systems are referred to as systems that are able to supply, store, send, receive, retrieve and process information and that may or may not be supported by information technology⁸⁰. Thus both a computerized decision support system as well as an age-old library fall under the same heading, although a greater emphasis here will be on information technological tools.

I will elaborate on six important information intensive phenomena that are of special relevance to one or two types of learning as discussed in part two, and are related to other types of learning because of their mutual dependency as discussed in chapter eight. Table 9.1 shows the relation between the six information processing phenomena and the four types of learning.

The chapter is built up as follows. First I briefly review the existing literature on organizational learning and information systems' support and will conclude that there is in fact a theoretical gap between the two concepts. In order to attempt filling this gap, I will analyze the role of information systems to support the six information intensive

⁸⁰ Because, apart from the more functional and technical oriented definitions, there is no general accepted definition of IS that allows for non-computerized information systems (Blonk van der 1996), I cannot rely on an already existing definition of information systems.

phenomena.

	internal learning	feedback learning	learning from others	creative learning
externalization of knowledge	+	+/-	+/-	+/-
objectivation of knowledge	+	+/-	+/-	+/-
internalization of knowledge	+	+/-	+/-	+/-
information selection	+/-	+	+	+/-
information interpretation	+/-	+	+	+/-
idea generation	+/-	+/-	+/-	+
+ = of significant importance +/- = of importance because the learning should be part of other types of learning				

Table 9.1 Information intensive phenomena and their related type of learning

9.2 RESEARCH ON ORGANIZATIONAL LEARNING AND INFORMATION SYSTEMS

A discussion of the implications of organizational learning for information systems is necessary since the interest within the information systems discipline in organizational

learning only occasionally surfaces⁸¹. When information systems researchers make use of the concept, it is primarily to explain the trial and error nature of information systems-related aspects such as information planning (Huysman et al 1994), designing (Hopstaken and Kranendonk 1990, Salaway 1987) or implementing (Argyris 1977). Although literature on how information systems may support the very processes of organizational learning seems to be increasing in importance (e.g. Boland et al 1994, Wijnhoven 1995), this area of research is still under-represented. A lack of attention from information systems researchers becomes even more conspicuous when we realize that organizational learning is an information intensive phenomenon. As is the case for processes such as bookkeeping and decision making, organizational learning can be described as a process that involves knowledge acquisition, information distribution, information interpretation and organizational memory (Huber 1991).

There are at least three reasons why the current information systems discipline falls short of dealing with organizational learning.

First, conventional information systems theory is still mainly focussed on a narrow conception of information phenomena, although things are changing with the rise of technological innovations in communication. In general, information processing is perceived as a process in which data forms the input whereas information that is meaningful and useful to the recipient is the output. Computerized information systems are the major tools which provide this information processing process⁸².

All these - and other - phenomena are predominantly approached from an 'engineer' perspective. Because of this perspective, information is mostly conceived of as quantified processed data. Clearly, organizational learning processes often require the exchange of information and knowledge that is less structured and quantified.

Furthermore, because the information discipline in general is focussed on a rather limited conception of organizational processes, it tends to neglect organizational learning

⁸¹ There is a vast literature on learning and information systems though this learning concerns machine learning such as is the case with for example neural networks.

⁸² Organizations too have been portrayed as information processing systems (Simon 1977, Galbraith 1977). In this case, information is not restricted to quantified data, though the perspectives share with each other a largely functionalistic tone, thereby treating information as a resource used to reduce uncertainties. Galbraith (1977) for example sees an organization as a complex system that has to collect and use information in order to reduce uncertainties regarding their environment. Boundary spanners for example can be seen as information brokers, capable of gathering information from outside and subsequently diffuse it within the organization.

processes as an information intensive phenomena. Essentially images of a machine and of an organism are dominant among information systems researchers, leaving alternative images of organizations almost untouched (Walsham 1991). Although information-intensive organizational phenomena extend beyond managerial processes of monitoring, control, and bookkeeping, these have been given significantly less information theoretical attention (Heng and Koh 1992). For example, information plays an important role in sustaining and changing organizational culture. Instead of quantified data, this information is mostly processed through story telling, socialization, gossiping, etc. (March and Sevón 1984). Likewise, information plays a significant and indispensable role during organizational learning.

Although things are changing as a result of the rise of innovative information and communication technologies such as Computer Supportive Cooperative Work systems (CSCW), Electronic Conferences, Group Decision Support Systems (GDSS), Internet, and Intranet, the traditional model of information systems is not very suited to promote learning. Accountancy, still acting as the dominant model of the information systems discipline, requires information that is factually correct, reduces uncertainty, and is delivered to the right person at the right time and the right place.

These requirements only apply to situations of perfect feedback learning. As mentioned, perfect feedback learning is often an illusion. In practice learning is complicated as a result of focussed selection and interpretation of information. There is perhaps an even more important reason why the traditional model of information and information systems within organizations is not relevant to situations of learning. As argued in this thesis, there are various ways in which organizations learn, learning from feedback information is just one possible type of learning.

Another explanation for the neglect of information systems researchers is that the **process** of organizational learning has only occasionally been the subject of a thorough analysis. Without such knowledge it is hard to say something about the use of information systems to promote organizational learning.

In the remaining sections, the role of information systems during learning is analyzed by focussing on six important information intensive phenomena that together characterize organizational learning.

9.3 EXTERNALIZATION OF KNOWLEDGE

During the process of externalization, private knowledge is communicated. The exchange of individual knowledge is traditionally supported by the use of non-information technological (IT) knowledge systems. Work-meetings, committees, consultative structures, projects groups and other forms of structured communication may enable the externalization of private knowledge. Shrivastava (1983) has labelled these systems 'participative learning systems'. Through committees or working groups the organization is able to pool together the knowledge and expertise of individual members through communication.

Externalization also occurs during day to day practices within and between communities of practice (Brown and Duguid 1991, Lave and Wenger 1991). Furthermore, unexpected encounters, coffee-corners, lunches, drinks, all may support the communication of individual knowledge.

In addition to face to face communication, externalization can be supported by communication technology such as the telephone, e-mail, and bulletin-boards.

Nowadays the externalization and sharing of individual knowledge is considered as an important aspect of so called 'knowledge management'. Contributors to the concept of knowledge management have stressed the importance of 'knowledge management systems' (e.g. Boersma 1995, Peters 1992, Weggeman and Boekhoff 1995).

Knowledge management systems are designed to advance the sharing of dispersed personal knowledge in order for management as well as other organizational participants to learn from each other⁸³.

Knowledge management systems belong to the family of 'Groupware'. The term 'Groupware' refers to software products that support groups of people engaged in a common task or goal⁸⁴. The software used provides a mechanism for individuals to share opinions and resources (Turban 1995). Groupware consists of three kinds of user interaction (Kirkpatrick 1996):

⁸³ McKinsey for example introduced a 'Firm Practice Information System' which reports on lessons learned by project leaders on particular consulting assignments (Peters 1992).

⁸⁴ When the focus is not only on the technology but also on the people employing the technology, Groupware is also referred at as "Computer Supportive Cooperative Work" (CSCW).

- Communication:** mainly with the use of E-mail and related functions;
- Collaboration:** on-line discussion groups and common access to documents and shared databases;
- Coordination:** allowing workers to jointly accomplish specific procedures and tasks.

Lotus Notes and Intranet are presently two of the most widely used groupware systems which function as so-called 'knowledge management systems' (Kirkpatrick 1996). Lotus Notes and Intranet act as group communication environment that allows users' access and creates shared information (Turban 1995). They provide a workgroup E-mail, distributed databases, bulletin boards, text editing, document management, workflow capabilities, and access to Internet⁸⁵.

Because their general aim is to provide access to knowledge dispersed within the organization, knowledge management systems avoid to a certain extent the problem of dominant coalitions acting as organizational knowledge-gatekeepers, as discussed in chapter four.

They are also able to objectify knowledge so that personal or locally shared knowledge is transferred to organizational knowledge. As such, knowledge management systems function to hold on to knowledge that otherwise would be lost in case participants leave the organization.

Knowledge management systems also face problems that may limit the effectiveness of externalization. These problems are also relevant to other information systems that will be discussed in later sections.

First of all, a lot of knowledge within organizations is of a tacit nature and consequently difficult to articulate. Since knowledge management systems are not able to capture knowledge that is of a tacit nature, much of this knowledge will be ignored while individuals tend to rely too much on the expressed part of the knowledge (Van der Zee

⁸⁵ See for the differences between Intranet and Lotus Notes, Fortune July 8, 1996

1996).

Next to their focus on explicit knowledge, knowledge management systems primarily address only a small part of the various types of knowledge within organizations. Figure 9.1 represents the areas that knowledge management systems may cover. The dark fields depict the area in which knowledge management systems may be purposefully designed for the support of the externalization of individual knowledge. The grey field refers to mostly unplanned and unintended externalization.

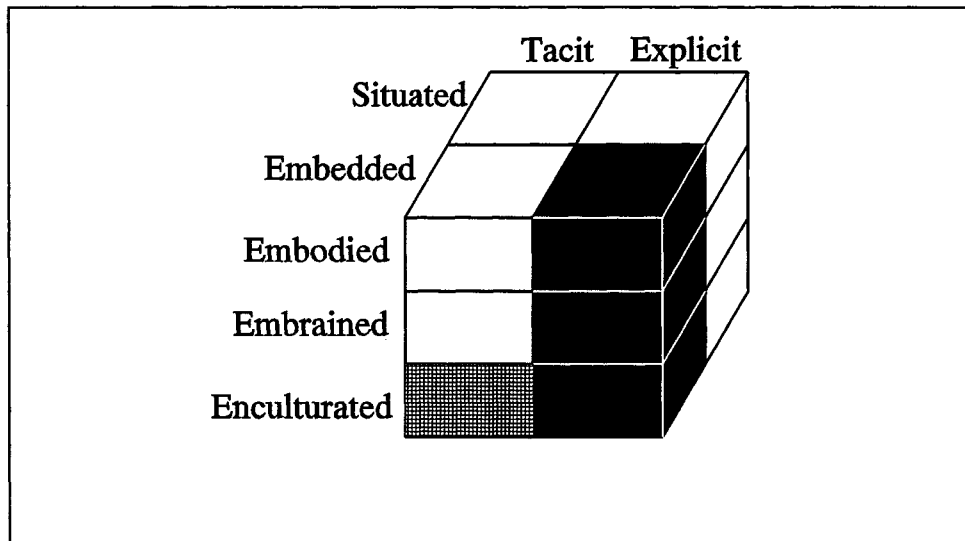


Figure 9.1 Fields of knowledge covered by Knowledge Management Systems

In particular, knowledge management systems only support the exchange of embedded, explicit knowledge that can be transferred into encoded knowledge or information.

Embedded knowledge is knowledge that resides in systemic routines such as rules, technologies, and procedures (Blackler 1995)⁸⁶. Just as tacit knowledge stands in contrast to explicit knowledge, embedded knowledge can be considered the opposite of '*situated*

⁸⁶ Organizational learning processes that involve the learning of embedded knowledge are for example referred to by Levitt and March's (1988) development of the notion of organizational routines. Organizations that are predominantly focused on this type of knowledge are what Blackler (1995) call "Knowledge-routinized organizations", with low skill requirements and typically capital, technology, or labour intensive. These organizations can be labelled "Machine bureaucracy" to use the typology of Mintzberg (1983) to typify such traditional organizations.

knowledge'. Situated knowledge is located in the practice and interaction of individuals (Pentland 1992). By dividing knowledge into embedded versus situated knowledge, it is recognized that knowledge does not always reside somewhere, for example in heads or information systems; knowledge may well be created during interaction.

Furthermore, this embedded knowledge can both be '*embrained*' or '*embodied*'. Embrained knowledge is 'knowledge about' (James 1950) and depends on cognitive abilities, while embodied knowledge is 'knowledge how' (Ryles 1949) and is action-oriented, such as skills (Blacker 1995)⁸⁷. Both embodied and embrained knowledge are mostly only partly explicit.

Encoded knowledge is information conveyed by signs and symbols⁸⁸. Forms of encoded knowledge may be both written and generated as electronic information and is always explicit.

To a lesser extent, knowledge management systems may also channel enculturated knowledge⁸⁹. *Enculturated knowledge* refers to the shared understandings, is mostly of a tacit nature, and concerns things such as language, symbols, rituals, norms and values. Externalization of enculturated knowledge occurs through the very structure of the system. For example, information systems influences what information and knowledge is considered as relevant and what will be considered as irrelevant. I will return to the impact of information systems on culture and vis-versa when addressing the process of internalization.

⁸⁷ Organizations that emphasize embrained knowledge are typically "Knowledge Intensive Firms" (Starbuck 1992) such as software consultancy. According to Blacker (1995), Argyris and Schön (1978) as well as Senge (1992) refer to organizational learning processes that predominantly involve the learning of embrained knowledge.

Organizations that emphasize embodied knowledge are expert-dependent organizations or 'professional bureaucracies' (Mintzberg 1983) such as hospitals. Organizational learning processes that involve the learning of embodied knowledge are for example referred to by Hirschhorn (1984) who illustrated that operators' tacit understandings of machine systems are more important than their general knowledge.

⁸⁸ We could think of information intensive organizations such as administration offices as organizations typically focused on encoded knowledge. Organizational learning processes that predominantly focus on the learning of encoded knowledge are for example referred to by Zuboff (1988) who analyzed the informing power of IT.

⁸⁹ Organizations that emphasize explicit enculturated knowledge are often communication-intensive such as McKinsey & Company (Peters 1992). Organizational learning processes that involve the learning of enculturated knowledge are for example referred to by Senge's discussion on the importance of a shared vision.

Table 9.2 provides examples of each type of embedded knowledge in a tacit and in an explicit form. Because of the emergent nature of situated knowledge, it is not possible to provide examples of knowledge that is situated. Consequently, the examples given in table 9.2 all concern cases of embedded knowledge.

	explicit knowledge	tacit knowledge
embrained	facts: $1 + 1 = 2$	repressed experiences
embodied	manuals	riding a bicycle
enculturated	corporate vision	implicit norms and values

Table 9.2 Examples of various types of knowledge

Thus, by overreliance on knowledge management systems as the unique source of knowledge within the organization, one runs the risk of ignoring the importance of situated knowledge, tacit knowledge and forms of enculturated knowledge⁹⁰.

A final reason which makes knowledge management with the support of computerized systems problematic, is that not everyone is willing to share his or her knowledge with others. As a result, the stored knowledge base may not represent the actual knowledge that is present within the organization. This is further complicated by the fact that the updating of knowledge management systems also requires time and effort by organizational participants, something which heavily depends on its perceived returns.

⁹⁰ Another possible problematic aspect of information systems such as Intranet or Lotus Notes is that it implies that no face to face communication is needed in order to exchange information. According to the information richness theory (Daft and Lengel 1986), the exchange of information without face to face communication can be problematic, especially in case information systems support the exchange of rich information. Information richness is defined as the ability of information to change understanding within a time interval. In order of descending richness, the media classifications proposed by Daft and Lengel (1986) are (1) face to face, (2) telephone (3) personal documents such as letters and or memos, (4) impersonal written documents and (5) numeric documents. However, these traditional communication media have the potential to be supplemented with or replaced by new electronic communication media such as e-mail, voice mail, video conferencing, electronic bulletin boards, which compliates the validity of the theory. Email for example can also support rich information (Lee 1994). Consequently, more research is needed on the possible consequences of externalizing knowledge without face to face communication.

In sum, although systems that are believed to support so called 'knowledge management' are capable of supporting the management of externalizing knowledge, they are focussed on the externalization of explicit embedded knowledge and assume people are willing to make their private knowledge public. Hence, organizations should not rely solely on these computerized systems when they want to learn from their members. Other non-IT-based systems such as meetings, stories, communities of practice, etc. are probably more important information systems that support the externalization of private knowledge.

9.4 OBJECTIVATION OF KNOWLEDGE

When knowledge has become externalized, it will be objectified into collective knowledge (Berger and Luckman 1966). In terms of organizational learning, this process takes place when knowledge is stored in the organizational memory. Knowledge must have certain characteristics for it to become organizational knowledge and to be retained by the organization. Duncan and Weiss (1979) argue that organizational knowledge must be communicable or understood by others; it must also be 'consensual', or accepted by others for its validity and utility. I would add that these 'others' are usually members of dominant coalitions which act as organizational knowledge-keepers. These dominant coalitions may be very influential when deciding about the content of the organizational memory.

A rather broad conception of organizational memory is used here. Although organizational knowledge is always embedded, it may range from explicit, embodied and embrained knowledge such as manuals and organizational annuals, to tacit enculturated knowledge such as language, rituals, symbols. Information systems, such as libraries, Management Information Systems (MIS), and databases are pre-eminently suitable to function as repositories of explicit organizational memory. However, what has been said above regarding the limited possibilities of transferring private knowledge into encoded knowledge, also applies to the possibilities of computerized information systems to function as organizational memory.

Although the literature that addresses organizational memory information systems (OMIS) is growing (see for a review Stein 1995, and Walsh and Ulson 1991), it is still in

its infancy ⁹¹.

In general, existing literature on OMIS tends to neglect more (psycho-)sociological aspects of phenomena. For example, OMIS are prone to power issues. The question who determines what knowledge should be considered organizational knowledge and as such should be stored in the OMIS, is one of importance but has not been addressed fully. The same is true for the subjectivity of organizational memories. OMIS's provide interpretations of history rather than an objective collection of information from the past.

The literature on OMIS also approaches organizational memory as a rather static outcome of learning processes. Researchers tend to overlook the fact that organizational memory is always reconstructed the moment the embedded knowledge is used in practice. In contrast to computerized information systems that tend to stabilize these past experiences (Hedberg and Johnson 1978), non-IT based OMIS change constantly. The memory of organizations is for a large part captured in fuzzy systems such as stories. And because of its fuzziness, the content of the memory develops and changes over time. Stories for example, are told and retold in organization. As Sims (1996) concludes:

"If we want to look at organizational learning, this change in the stories that are told (...) will be a particularly fruitful place to look at both for hearing and understanding both the content and the process of organizational learning" (1996, p. 6).

Clearly, more research is needed on the role and impact of information systems to objectify organizational knowledge. What has been said for externalization of knowledge, also applies to objectivation of knowledge: the organizational memory is too much a fuzzy phenomenon to be supported solely by explicit information systems. Experts, informal networks, stories and other non IT based information systems are probably more important in determining the content of the organizational memory.

⁹¹ Stein and Zwass (1995) define an organizational memory information system (OMIS) as "a system that functions to provide a means by which knowledge from the past is brought to bear on present activities" This definition is followed by the following sub-sentence: "thus resulting in increased levels of effectiveness for the organization". This criterium of effectiveness is based on a functionalistic model derived from the four effectiveness functions identified by Parsons (1959): integrative function, adaptive function, goal attainment function, and pattern maintenance function. I do not agree with this latter part of the definition: organizational memory may very well result in a decrease of effectiveness, for example when the knowledge becomes obsolete or when organizations rely too much on their memory.

9.5 INTERNALIZATION OF KNOWLEDGE

Objectified knowledge will in turn be internalized by organizational members at the moment it is used in practice. Internalization of knowledge takes place through the learning of history and the learning by imitating colleagues. Learning from history often happens through story-telling, gossiping, and idle talk (March and Sevón 1984). History can also be transformed into explicit information systems in the form of manuals, for example, which can be used for training purposes. Learning by imitation can be supported by cooperation and apprenticeship (Lave and Wenger 1991). Again, the role of computerized information systems is limited during internalizing explicit knowledge.

(Computerized) information systems do however play an important role in the internalization of **tacit enculturated** knowledge. Cultural aspects can always be found in information systems since information systems are ultimately a representation of reality and therefore also of the culture (Tibosch and Heng 1994). Information systems provide means of representing reality through a set of concepts and symbols, and in so doing, information systems can be considered as a medium for the construction of social reality (Orlikowsky and Robey 1991). Based on Giddens' Structuration theory, Orlikowsky and Robey (1991) argue that IT makes it possible to institutionalize the interpretation framework. While using the three modalities offered by Giddens: interpretive schemes, resources, and norms they demonstrate that by using information systems, "users draw on embedded knowledge, assumptions, and rules and through such use reaffirm the organization's structure of signification". By using information systems, users also "work within the rules and capabilities built into them, and through such use reinforce the organization's structure of domination". The use of information systems also assures that "users work within the authorized options, values, and sanctions built into them, and through such use sustain the organization's structure of legitimation" (Orlikowsky and Robey 1991, p. 161).

An illustration of this process of internalization through information systems is offered by Walsham (1991) while referring to the implicit function of accounting systems. Accounting systems are predominantly used to set targets, to monitor performances and to identify and correct failures. However, these accounting systems are only one way of looking at the world which institutionalizes organizational boundaries and emphasizes

certain numerical data. As such they can be seen as "institutionalizing the dominance of financial information" (Walsham 1991, p. 92)

Hence, information systems are clearly more than a technical construct. Everyone who is confronted with information systems in one way or another should recognize this in order to avoid or at least to be aware of possible (unintended) consequences such as domination and manipulation (Tibosch and Heng 1994).

9.6 INFORMATION SELECTION

Selecting information from the environment is a critical stage during learning, and in specific during feedback learning and learning from others. During feedback learning, information is collected from environmental actors, such as clients, customers, suppliers, and other stakeholders. In case of learning from others, the environment has a much broader scope and includes actors within the ecology of organizations. Enactment decisions such as what environments are relevant and what information is useful from these environments, are important to these two types of learning.

The literature on information systems and feedback learning is extensive, although seldom expressed in the same words. Management information systems (MIS) are pre-eminently suited to gather feedback information. Accountancy forms the prevalent model of these MIS's. MIS's as accounting systems provide 'information' on the past performances of the organization, current operating conditions and future projections. One of their main functions is to detect and correct errors (Argyris and Schön 1978)⁹².

Inter-organizational information systems, while reducing the organizational transaction costs, may also yield feedback information and information from others such as is the case for example with Computerized Reservation Systems in the airline industry (Christiaansen 1994).

Executive information systems (EIS) also support the process of collecting

⁹² In fact, when problematizing the role of IS in terms of organizational learning, Argyris (1977) refers to the defensive theories in use when designing and implementing information systems. He however does not problematize the very structure of IS's: IS's are conceived of as traditional accounting systems, designed to identify failures and to correct them.

information from the environment during both feedback learning as well as processes of learning from others. It is a computer-based system that serves the information needs of top executives. It helps management to scan both the internal as well as the external environments. While internal information is generated from various business units, external information comes from sources such as on-line databases, newspapers, industry newsletters, governmental reports, personal contacts and so on. These environments are scanned by the executives themselves, by staff, and/or by machines. EIS's are different from decision support systems and MIS's in that it is not primarily meant to support decision making. Rather, the aim of a EIS is to provide as much information about the environment as possible (Turbain 1995). In other words, EIS's are pre-eminently suited to support learning from others. The choice as to which environments are considered relevant and which are not, is however already an important decision in itself and can be subject to self-referential information use, as will be discussed below. In the words of March (1994) through such information systems, an organization learns from an ego of itself.

Information systems that support organizational imitation are systems that have the latent function of 'disease carriers'. Management journals and books, conferences, Business school courses, personal networks, consultancy firms, are examples of non-IT based systems that enable the diffusion of external knowledge. With the use of these systems, organizations learn to gain or maintain their legitimacy in their organizational field.

In the previous chapter, I argued that one of the significant problems organizations face when learning, is that this process is characterized by focussed selection of information. This focussed selection of information is a conspicuous tendency of computerized information systems. Miller for example refers to so called "focussed information systems" that "institutionalize and routinize gaps in organizational intelligence".

"Management information systems do not track the things managers believe to be unimportant or unchanging, but instead focus attention on what is thought to have mattered in the past.(..) And in many successful businesses, executives develop the self-assurance to home in very precisely on what they believe explains their success. Their information systems then fix upon this

and ignore everything else. (Miller 1994, p. 330)

Besides history, this focussed selection may also be a result of the dominance of reference groups who are able to influence enactment processes. What the group believes to be an important environment from which feedback information should be gathered or which should be imitated, may determine the actual learning process. In addition, specialization of the task structure will buffer the external knowledge diffusion and influence the exposure to information. Of special importance is the dominance of self referential forces in influencing the selection of environmental information.

The self-referential image of learning makes 'narcissistic' use of information conspicuous. The selection of information is guided by existing goals, values and opinions. The "searched for" information shapes the identity and as such influences the ego-centric, conservative learning processes of organizations. Executive Information Systems for example are designed to reproduce the organizational identity by directing attention towards pre-determined elements in the environment. Elements that do not contribute to a (re)production of this identity will likely not be accounted for. Vital information which is alien to the frame of reference of an organization is filtered out before it reaches consciousness, or is reinterpreted or 'rationalized' so as to remove discrepancies.

Walsham (1991) provides an example from the Vietnam War taken from Halberstam (1972) to illustrate this self-referential functioning of information systems. Halberstam describes how the internal organization of the American intelligence gathering operation in Vietnam was inadequately structured to cope with an understanding of the evolving conflict in Vietnam.

"Senior decision makers in the American military and political hierarchy concentrated on the 'information' coming from the field rather than questioning, until it was too late, the adequacy of the information systems structure which was supplying their own self-referential view of the world" (Halberstam 1972, p. 91).

All these forces result in focussed learning and influence the design of information systems. And because organizations use information systems to view the environment, they influence the process of organizational learning. Furthermore, once (computerized)

information systems are designed and implemented, they tend to freeze these pictures of the environment (Boogaard 1994).

Hedberg and Johnson (1978) observe that information systems incline to thwart organizational scrutiny and filter away relevant uncertainty, diversity, and change indicators. They argue that current information systems do more to stabilize organizations than to destabilize them. All information systems contain an implicit model of the world which may become outdated⁹³.

An implication for the development of information systems is the need for a constant reflection on the adequacy of the structure of those systems (Walsham 1991). Although this implication sounds trivial, in practice it will be difficult to achieve, certainly when we consider the problems of the inflexibility of information systems and the co-evolving 'soft ware crisis' (Boogaard 1994). Clearly, self-reflection to avoid self-reference cannot be built into software; self-reflection should come from its users and designers.

Another option to avoid focussed learning as a result of information systems use is to balance the use of these decision support systems with information systems that are designed to stimulate surprises and serendipity. To put it differently, in order to avoid focussed learning as a result of information systems use, organizations should balance feedback learning and learning from others with aspects of creative learning. I will return to this issue of information systems supporting idea generation in section 9.8.

9.7 INFORMATION INTERPRETATION

In addition to collection of information, the interpretation of information is also of due importance during learning.

Designers of information systems may already influence the way information will be interpreted. The same information can be interpreted differently when it is presented for example in quantitative or qualitative form, by means of graphs or by means of stories, through verbal modes or written modes. These degrees of information richness

⁹³ Hedberg and Johnson (1978) have addressed the problem of inflexibility of information systems by advocating the design of 'semi confusing systems'. In the remainder of their article, the Hedberg and Johnson (1978) propose ambiguous alternatives to destabilize organizations and IS among which are built-in 'early warning systems'.

influences the learning process (Daft and Lengel 1986). The rise of multimedia technologies suggests a possible reduction of focussed interpretation caused by limited information display (Boland et al 1994).

The issue of interpreting information has received more attention when approached from the level of semantics than from the level of syntactics (Boland 1987, 1991, Stamper 1992). Semantics deals with meanings and signification and belongs to the realm of hermeneutics.

Hermeneutics is the study of interpretation, especially in the process of coming to understand a text (Boland 1991). When hermeneutics is used to study information systems, the output from the system would then be viewed as a text being read and interpreted by the information systems user.

"The output of an information system is an unfamiliar text to be read, interpreted and made meaningful by those who use it in ways that will always surpass any clear representation its system's creators had in mind" (Boland 1991, 440).

A hermeneutic perspective on information systems provides insight into the problems of focussed learning, and learning under ambiguity in particular. Again, reference groups, self-referential forces, and specialization significantly influence the way information is interpreted. Information interpretation is never an objective activity. Individuals create interpretations, for example, according to the (cultural) norms that are prevalent within their organization or group. Significant others for instance, can be influential in shaping the interpretations of others (Smircich and Morgan 1992). Self-referential forces too influence not only what is considered as important but also how one should make sense of the information.

As a result of these tendencies, users of information systems may perceive the same output from different perspectives. The existence of various interpretations has long been considered as a problematic situation that should be avoided as much as possible. Writings on the 'corporate culture' and 'shared vision' for example, advocate the implementation of one single interpretation frame to be used as a meaning provider within the organization. As mentioned in previous chapters however, the existence of one dominant way of looking at the world has serious pitfalls. Organizational learning calls for diversity, not only in terms of a heterogeneous staff but also in terms of multiple

viewpoints. In terms of the interpretation of environmental information, this process requires the exchange and appreciation of each other's perspectives. Through this exchange, alternative interpretations can emerge which may avoid focussed learning. Group decision support systems are well equipped to support this process of reflecting on various interpretations.

Boland and his colleagues (Boland et al 1994, Tenkasi and Boland 1996) for example, propose the design of IT to support distributed cognition.

"Distributed cognition is the process whereby individuals who act autonomously within a decision domain make interpretations of their situation and exchange them with others with whom they have interdependencies so that each may act with an understanding of their own situation and that of others" (Boland et al 1994, p. 457).

Applications of IT then assist individuals in making interpretations of their situations, reflecting on them, and engaging in dialogue about them with others.

An example of such a system is "Spider" (Boland et al 1994), a software environment for distributed cognition. With the use of Spider, actors store their own interpretation of a particular situation into a knowledge base. The interpretation can be represented by spreadsheets, cognitive maps, notes, dialogue boxes, and graphs. Each actor then exchanges his or her uniquely represented interpretations.

Spider is an example of GDSS and is helpful in exchanging different definitions of the same situation. As will be mentioned in the next section, GDSS are also useful in generating new ideas.

9.8 IDEA GENERATION

The final information intensive phenomenon that will be discussed is that of idea generation and is mainly suited to support creative learning. Nevertheless, in line with the arguments put forward in chapter eight, other types of learning should incorporate aspects of creativity in order to become more successful. This also means that in order to avoid focussed information interpretation and selection, organizations should balance their use of information systems that support feedback learning and learning from others with information systems that are well-equipped to foster creative learning. To put it

differently, information systems that promote idea generation discussed in this section, also may promote successful outcomes of feedback learning and learning from others.

Simulation techniques such as scenario planning have often been considered as important (management) tools to stimulate so called "generative learning" (e.g. De Geus 1988, Isaacs and Senge 1992, Senge 1992, Stata 1989, Vinnix 1990). In fact, the 'Organizational Learning Centre' at MIT, Boston, has developed special 'learning labs' in which top management of various companies are able to make use of simulation software to explore possible future avenues (Senge 1992). Simulation techniques are focussed on learning about multiple enacted futures by trying to tease out the future events which they realize through posing 'what if' questions. However, this exploration is based on an already formed perspective and predetermined parameters. Hence, during simulation techniques such as scenario planning one defines ex ante from what to learn. In other words, these systems stimulate exploring within predefined solutions which limits the open character of idea generation.

A more unrestricted form of idea generation is open brainstorming and exchange of ideas. This can be supported by Group Decision Support Systems (GDSS) which again belongs to the family of Groupware. GDSS is an interactive computer based system which facilitates the solution of non-quantitative, unstructured problems, and facilitates electronic brainstorming (e.g. Gallupe and DeSantis 1988, Nagasundaram and Bostrom 1994, Nunamaker et al 1987). Through electronic brainstorming, ideas are exchanged in order for new ideas to emerge. By building on each other's ideas, individuals get creative insights they did not have before (Turban 1995).

Besides the problems mentioned when dealing with knowledge management systems, a GDSS has also its own problems.

First, behind a GDSS lies a rather harmonious perception of social phenomena, since it takes the view that people have enough empathy to consider and appreciate each others standpoint.

Secondly, although a GDSS is often believed to have built-in mechanisms that discourage the development of destructive conflict, miscommunication, or "groupthink" (DeSanctis and Gallupe 1987), it remains to be seen to what extent IT can seriously diminish the occurrence of negative group behaviour. As was illustrated with the AZ story

and theoretically argued in chapter eight, miscommunication is often a result of social psychological forces that are deeply ingrained in the thinking and acting patterns of organizational members. For example, already during the process of socialization, people tend to adopt the beliefs of their personal reference group. The introduction of information systems such as GDSS's will only slightly filter away these influences.

Designers of GDSS's as well as its users should be aware of various - often hidden - factors that may complicate organizational learning rather than promote it. The literature on GDSS's which supports the exchange of various interpretations is rather optimistic about the possibilities of IT to encourage mutual understanding. The area needs more indepth qualitative research of the use of these systems in real practice. Then, the actual possibilities of GDSS's during learning might come to the surface.

Up until this point, the focus was mainly on decision support systems. Although these systems are capable of deriving alternative solutions without any constraints such as is the case with simulation techniques, they are not well suited to explore alternative problems. Exploring alternative problems requires different information systems than the systems discussed so far.

Whereas the rationale behind decision support systems is reducing uncertainty, the rationale behind these alternative systems is to reduce certainty by extending the scope of information that might possibly be relevant in an organization's future. Hence these alternative information systems consist of information that has not been thought of until it is gained. This implies that one cannot specify the information requirements *ex ante*.

Although these ideas on the information requirements of learning fully contradict the traditional assumptions of mainstream information systems literature, they are not totally absurd. In fact, libraries, as one of the oldest and most universal information systems are based on these very information requirements (Heng and Koh 1992). Libraries consist of information sources whose relevance cannot be determined beforehand. In fact, the greater part of a library's inventory will never even be used at all. Librarians, in contrast to information managers, do not determine in detail the information requirements of potential users before they conclude whether an information source has relevance and thus should be incorporated or not. Therefore, libraries serve the purpose of providing a large reservoir of new knowledge most of which is irrelevant at the present but could be of relevance in the future.

Another important characteristic of libraries is that their use often leads to unexpected or serendipitous findings (Foskett 1984). Although a lot depends on the way the books are arranged as well as the pleasure the individual has in visiting a library, - browsing along the shelves and using cross-references - provides knowledge one never had thought of or which has been forgotten.

"Those who confine their interpretation of information to its narrowest sense of factual data seem to forget that browsing among the shelves of a good library provides a conspectus of any field of knowledge far wider than the compass of one individual mind, and offers a choice of approach and treatment which can lead to what W.I.B. Beveridge calls a 'eureka situation' (Foskett 1984, p. 53)."

The image of a library as an information system serves as an interesting model and provides us with two central features of information systems that promote idea generation.

First of all, information systems that stimulate idea generation should contain an inventory of knowledge without the constraining issue of relevance.

Secondly, these information systems should provide the opportunity to encounter unexpected and serendipitous findings. This means that the supply of information should not be arranged too much so that it might become focussed information systems⁹⁴.

The rise of Internet and Intranet facilities provide excellent possibilities for the support of unfocussed or explorative learning. In the case of Internet, the supply of information is world wide. In case of Intranet, the supply of information is basically company or business-wide although most Intranets provide access to predetermined information sources that are offered by Internet. Like libraries:

- 1 Internet and Intranet consist of a large reservoir of knowledge.
- 2 Internet and Intranet offer the opportunity to make cross-references and to come across unexpected or previously unknown sources of knowledge.
- 3 Existing personal knowledge serves as an important platform from which

⁹⁴ Besides the issue of irrelevance and serendipity, libraries contrasts traditional information systems such as MIS's in that the information in a library can be factually wrong, and the knowledge and opinions are often contradictory.

exploration takes place.

- 4 Enthusiasm of the user is important in determining whether he or she will make full use of the opportunities the system offers.

IS that support these requirements could be called Alien Information Systems (AIS) (Huysman et al 1994). The salient characteristic of these AIS's is that they capture information whose relevance cannot be determined beforehand and that they are able to stimulate chance and serendipity. Hence, libraries, Internet and Intranet facilities offer excellent examples of the role of AIS's as means to avoid focussed information selection⁹⁵.

Besides the issues of irrelevance and serendipity, information systems that support idea generation such as AIS's should also enable a different kind of communication process than the communication during other learning processes. Communication during idea generation is not only needed to facilitate the flow of information **from** one person to the other. Communication during idea generation also assists the learning **with** each other and the connection of uncoupled fields of knowledge. In the latter case, communication serves more as a sort of platform from which new ideas emerge. This was illustrated by the case story of LeaseCo. The communication between Johnson and his network partners was more one of brainstorming than one of trading knowledge. In addition, while communicating his dream of a Mobility Pass to almost every one he came across, he hoped that his knowledge would flow to places he could not think of beforehand. In other words, by communicating his idea forcefully, uncoupled fields of knowledge were connected.

Hence, informal networks are a good example of information systems that promote this kind of communication. As the Lease Co story illustrated, informal networks seems to be an important information system to search and gain new knowledge. Certainly,

⁹⁵ Internet and Intranet do however have their own problems that may limit free access to information. Imagine the situation in which every one is using the internet to imitate each other. In such an extreme case, it is not hard to imagine a scenario in which one will think twice before making the outcome of this learning process public through Internet. Free access to information through the use of the Web is an issue that is currently one of increasing concern. Its consequences for learning and its related dilemma between creative learning and learning from others, certainly deserve more research attention.

informal networks resemble to a great extent libraries, Intranet and Internet in their ability to search and create new knowledge, and can therefore be ranged on the side of AIS's.

Clearly, more research is needed on the possibilities of AIS's and in specific Intranet and Internet to support (creative) learning.

9.9 CONCLUDING REMARKS

In this chapter, I have tried to analyze in what ways information systems can promote successful learning. This is done by perceiving learning as consisting of various information intensive processes. These six processes in turn served to explore the role of information systems.

Information systems provide practical tools for organizations and managers to promote organizational learning. Amongst other things, their possibilities are related to the degree in which these systems depend on information technology, to the degree in which it stimulates focussed learning, and to the degree in which the organization balances the various types of learning and their related information systems.

Although organizational learning is an information intensive phenomenon, its relation to information systems has only sporadically enjoyed research attention. As a result, this present attempt was fairly explorative which has consequences for its scientific quality. Much more research is needed on the possibilities of computerized information systems such as GDSS, Intranet, Internet to support organizational learning. But next to computerized information systems, organizations rely heavily on information systems that are not necessarily supported by information technology. These systems, such as Organizational Memory Information Systems, Knowledge Management Systems, and Alien Information Systems, also need more research attention.

To be sure, it was not my intention here to provide implications for information systems design. I would like to leave these technical aspects to future researchers.

CHAPTER TEN

CONCLUDING REMARKS

10.1 INTRODUCTION

This thesis began by reviewing existing literature in search of a theory of organizational learning. This effort yielded many valuable though diverse ideas of the concept. It also showed that contemporary theories on learning are subject to one or more biases. In an attempt to create an alternative perspective that integrates the existing valuable aspects of the literature, challenges the various biases, corresponds with empirical findings, and exploits relevant ideas put forward within other theoretical fields, a typology of four mutually dependent learning processes was introduced. Subsequently, I discussed the implications of this alternative perspective on organizational learning for organizational practitioners as well as for the discipline of information systems.

In this final chapter, some concluding remarks are given. The chapter starts with a summary of the basic arguments of this thesis. This will be followed by discussing to what extent this work can be considered a post-modern approach to organizational learning. Subsequently, the question will be addressed in what way this effort contributes to existing knowledge on organizational learning. The chapter ends with several recommendations for further research.

10.2 SUMMARIZING THE ARGUMENTS SO FAR

Organizational learning is a concept that has become more and more popular within both corporate and academic worlds. Although many articles and books are dedicated to the subject, there is still a lot of confusion regarding the learning of organizations. Consequently, what is needed first of all is to try to integrate the various ideas surrounding learning. This is especially important since every single perspective on learning sheds light on different yet valuable aspects of the concept. Chapter two identified six perspectives on learning.

The adaptation perspective is one of the oldest perspectives and considers learning as a process of adapting to environmental demands. The incremental innovation

perspective understands learning as the diffusion of external knowledge; its success is influenced by the organization's past history. The assumption sharing perspective is mainly cognitively oriented and assumes that learning takes place when individuals share their private beliefs and question organizational frames of references. The organizational knowledge perspective perceives learning as an information processing phenomenon during which organizational knowledge is developed. The learning organization perspective focusses on a specific organizational form that is able to promote successful outcomes of learning. The social constructivist perspective emphasizes informal learning processes that take place during day to day activities within communities of practice.

Every perspective has its valuable point. Nevertheless, purely combining these valuable ideas would not generate a suitable alternative perspective since all six perspectives have a tendency to be biased in certain directions and at the same time, they may overlook alternatives. Chapter three identified five biases. By challenging these biases while making use of the valuable existing ideas on learning, the attempt was made to introduce a more integrative perspective on learning.

The 'improvement bias' refers to a tendency to assume that learning results in improvement, intelligence or innovation. This improvement bias is a result of an outcome perspective on learning. In order to overcome this bias, learning was approached in this thesis from a process perspective. A process perspective reveals the dynamics of learning and the potential of learning defects. As a result, learning may also end up in inertia or even destruction.

The 'individual learning bias' refers to a tendency to focus on individuals as learning agents. In order to overcome the individual action bias, the use of the institutionalization theory was proposed where action and structure find each other in a reciprocal relationship.

The 'systems thinking bias' refers to the predominance of systems thinking as the model to explain the motives for learning. Organizations learn in order to stay aligned with their environment. Hence, aspects other than the common 'reaction to environmental responses' are not taken into account. Plain chance events, exploration, the will of managers to 'actualize' themselves, the wish to take risks etc. are all important reasons why organizations learn.

The 'planned and strategic learning bias' refers to the assumption that learning can

be planned for and can even be used for strategic purposes. It is assumed that organizations know what they want to learn tomorrow, that they can anticipate these learning needs even if this involves radical changes. What these writers tend to overlook is that learning often occurs unnoticed and accidentally and that because of organizational history, radical changes are difficult to make. In this thesis, learning was considered an evolutionary process made up both of stochastic as well as purposefully planned events.

The 'one/two-sided learning bias' is present within almost all literature on learning and refers to the tendency to focus on only one or two aspects of learning. In case of the latter, these two aspects are seen as discontinuous while one is inferior to the other. Single loop for instance, is inferior to double loop, adaptive learning is inferior to generative learning. In order to provide a broader and integrative perspective than is the case with the literature on learning, four mutually dependent types of learning have been introduced.

The six perspectives described in literature on learning have made possible the identification of these four types of learning.

The alternative perspective introduced in this theses, assumes that the process of organizational learning is an evolutionary process whose outcome depends heavily on the existence of learning imperfections. The process of learning can be of a different nature, depending on the sources of (re)constructed organizational knowledge. The types of learning that have been identified in part two of the thesis are: internal learning, feedback learning, learning from others and creative learning.

Internal learning is the basic process of learning during which the organization learns from its members and the members from the organization. Feedback learning occurs when the organization learns from feedback information taken from the environment. Learning from others occurs when the organization learns from the experience of other organizations through the diffusion of external knowledge. Creative learning involves creating new knowledge and occurs through experimenting, exploration and creativity.

With this theoretical exertion, I have tried to both thwart the various biases as well as to borrow from the various interesting insights that already exist within the extensive literature on organizational learning. In this manner, an attempt was made to integrate the existing literature on learning and consequently to provide more clarity surrounding the concept of organizational learning.

In part three of the thesis, the implications for organizations was treated. Chapter eight addressed the question how organizational learning can result in positive outcomes such as improvement, intelligence and innovation. Given that organizational learning processes often go astray, I approached the question by addressing the causes of imperfect learning and how organizations can try to avoid these causes. It was argued that organizations can strive for successful outcomes of learning by circumventing instances of focussed selection and interpretation of information - 'focussed learning' - and by balancing the four types of learning.

Focussed learning can be the result of the dominance of reference groups, self-referential forces, physical and cultural conditions, specialization, and the occurrence of hidden learning. It results in a lack of diversity within organizations and consequently in the occurrence of path dependency. Avoiding its occurrence requires more communication and self-awareness. Dominance of reference groups and self-referential forces often require a third actor who is able to intervene and analyze imperfect learning processes from an outsider's point of view. Revealing hidden learning practices can be realized through the use of ethnographic research studies.

The second general cause of learning imperfections is the occurrence of unbalanced learning. By unbalanced learning I referred to the situation in which the organization is focussed too much on one type of learning while ignoring others. Consequently, organizations should try to complement present learning process with elements of other types of learning. First of all, this is needed to avoid path dependency. For instance, internal learning should be complemented by feedback learning in order to detect and correct errors; without feedback learning, an organization acts as a closed system. Aside from avoiding path dependency, balancing four types of learning is also necessary to avoid other negative tendencies. For example, when an organization focusses too much on the experience of other organizations without reacting to feedback from its immediate environment, it may fall into the trap of needless mimicking. On the other hand, when an organization is too focussed on their feedback information, it may fall into a competency trap. These mutual dependencies exist for all possible combinations of learning types.

In addition to these general implications for organizations which might show them how to avoid learning defects and improve their learning capacity, organizations can also make use of information systems as tools to support their learning processes. In chapter

nine, I analyzed six information intensive processes that characterizes organizational learning, in relation to the role of (computerized) information systems: externalization, objectivation, internalization, selection, interpretation, and idea generation.

It was argued that externalization of knowledge can be supported by the use of knowledge management systems such as Intranet and Lotus Notes. The discussion was mainly focussed on the limitations of these systems.

Information systems that support objectivation of knowledge are so called Organizational Memory Information Systems (OMIS). Again, some marginal boundaries regarding their effectiveness were drawn.

During the process of internalizing organizational knowledge or memory, information systems play a role in the spreading of cultural assumptions. As such, information systems may serve as systems of manipulation.

Selection of knowledge and information may also influence the success of learning. As argued in chapter eight, inefficiencies of learning are often a result of focussed information selection. It was argued that most computerized information systems stimulate this focussed way of learning.

Interpretation of knowledge and information can also influence the success of learning. While different interpretations may bring about processes of learning under ambiguity, shared interpretations may result in path dependency. What is needed therefore are information systems that enhance the sharing of different interpretations. Groupware systems may be suitable for these purposes.

Finally, information systems that support idea generation are not only important in supporting creative learning, they also have the potential of avoiding focussed selection and interpretation of information. The possibilities of simulation software and Groupware systems as the most accepted information systems that support idea generation, were discussed. It was argued that unconditioned exploration calls for alternative systems. These so called Alien Information Systems (AIS) consist of information whose relevance cannot be determined beforehand and which consequently stimulates the occurrence of chance and serendipity. Information systems which belong to this category of systems are for example informal networks, libraries, Intranet, and Internet.

The chapter concluded with expressing the need for more research on the possibilities of information systems to support successful outcomes of learning.

10.3 POST-MODERNISM AND ORGANIZATIONAL LEARNING

One could argue that the ideas put forward in this thesis have a rather post-modernistic touch. In modernistic thinking, aspects such as unity, reference, control and progress are some of the guiding principles embedded within ideas of 'modernist' organizations. The dominance of post-modernistic thinking within organizational analysis has given rise to almost opposing alternative avenues of approach toward the analysis of organizations and organizing.

Literature on post-modernism and organizations can be divided into two perspectives. First, there is the perspective that focusses on post-modern organizations among which are virtual organizations such as network organizations. In this line of thought, the key is to imagine forms of organizations that can be considered as alternatives to modernistic forms such as described by Morgan (1986) in his construct of organizations as machines, as organisms, and to a lesser extent as systems of power. A well-known representative of this perspective is Clegg (1990).

The other perspective focusses on post-modernistic analysis of organizations where the emphasis is on the production of organization more than on the organization of production. Well known representatives of this perspective are Cooper and Burrell (1988).

Here I am more interested in the second approach to post modernism.

Below some of these post-modernist issues are introduced and related to the present discussion on organizational learning. The reader who is interested in a more substantial account of post-modernism in relation to organizations, is referred to (Burrell 1988, Clegg 1990, Cooper 1987, 1989, Cooper and Burrell 1988, Gergen 1991, Parker 1992, Power 1990).

First of all, post modernism rejects the idea of an independent, absolute truth. Modernists would argue that the development of knowledge is not an effort to gain more and more knowledge about reality. In line with this train of thought, learning cannot be considered a process of becoming wiser and wiser. Improvement and efficiency gained through rational strategies such as prescribed for example by the literature on strategic

management, information planning, and accountancy, are considered fallacies.

Events and actions are always open to multiple interpretations. These so called 'texts' create a social reality that is dominant at that particular time⁹⁶.

Post modernists reject the concept of reference as a univocal relationship between forms of representations such as words or research and the external world. Instead of perceiving the knower as independent, or at least partially independent of the knowledge he or she acquires, post modernists consider the knower and the known as ultimately connected. This idea is similar to that of self-reference. What we perceive as relevant knowledge cannot be separated from who we are. "Believing is seeing" is just as valid as "seeing is believing".

Denying the existence of an absolute truth also implies a rejection of the modernistic obsession with progress. This is also reflected in the conception of organizational learning as a process whose outcome, be it progression or deterioration, cannot be predicted without a close look at the actual processes that make up learning.

The research on organizational learning too can be analyzed from a modernist vs. post modernist perspective. From a modernist point of view the multiplicity of ways in which organizational learning is conceptualized and used can be considered a roadblock to progress. From a post-modern view however, the presence of multiple representations of organizational learning is not a problem to be solved - it is the way discourses are (Thatchenkery 1996).

The idea that there is not one absolute truth, nor one absolute organizational learning model was also present in this thesis. The purpose of the research was to contribute to the ongoing discourse rather than to present any single theory on organizational learning.

Related to the idea that there is no single truth is the notion that knowledge is always socially constructed. This does not imply that human beings are free players.

⁹⁶ While the interpretation given to a social reality is considered a text, a theory of this reality should be considered as a story or a narrative, while a meta-theory such as marxism is labeled a meta-narrative. Likewise, this thesis is nothing more than a story with which you may feel comfortable with or not. To say that this story is incorrect is within the spirit of the post modernism a fallacy.

Rather the opposite, institutional conditions and social context may turn an organization into a prison (Foucault 1977). Organizational members cannot simply step outside the institution, since the social world is constructed by it. "(w)e are members whether we like it or not. All organization does this, all organizations are "total" in the sense that the prison is what gives us our identity" (Parker 1992, p. 6). Furthermore, in the spirit of Freud, post modernists argue that individuals do not have their own independent autonomous identities. There is always 'the other' within the individual.

The idea that the discipline of organizations constructs the individuals within them is also referred to in this thesis. By focussing on the process of institutionalization and in specific internalization, I argued that individuals learn to become organizational members. The AZ case illustrated the dominance of the organizational routines. It also illustrated the importance of the influence of reference groups during learning. This observation too, questions the idea of voluntaristic action and free agents.

Post modernists reject the popularity of system thinking within modernistic accounts on organizations (and other so called 'systems'). Modernists perceive organizations as systems, where every element within their boundaries is ultimately connected to other elements, and where environment determines the action of the organization. In contrast, post-modernists do not see organizations as driving on determinacy. Chance, surprise and unpredictability are important aspects that trigger action and make system-thinking irrelevant.

This thesis also goes beyond system-thinking. It has been theoretically argued and empirically illustrated that the triggers to learning can often be found in for example serendipitous findings and unexpected events.

Post modernism rejects the obsession of modernism with unity. Organizations are considered scenes of potential instability. There is always a tension between unity and diversity, consensus and disagreement. And as Lyotard (1984) argues, this tension is the energy of social life. In relation to organizations this implies that post modern organizations incorporate 'difference' through the increase of internal heterogeneity, hiring of minorities, embracing playfulness, inviting criticism, and enabling external realities to enter the organization.

Emphasis on difference is mainly reflected in the discussion of 'creative learning'

and the way information systems may promote learning. Instead of depending on information systems that reduce **uncertainty**, organizational learning, and specifically learning from others and creative learning, aim toward systems which reduce **certainty** and that introduces alien information.

Furthermore, in this thesis, I have stressed the importance of incorporating various elements - often considered as opposite - such as balancing internal learning with creative learning. Conditions which foster successful learning also give rise to potential instability.

In addition, behind the ideas presented in this thesis lies the general notion that organizational behavior is often irrational. Depending on the process of learning, this irrationality should either be repressed or encouraged.

Rationality is often impeded for example because people learn from experience which is confounded by experiences of others; or because they are unable to have a complete picture of their environments and remain unable to see how environments react on actions of the organization.

These irrationalities may generate inconsistencies and ineffectiveness. Organizations can strive for more rational behavior. They can create certain conditions, such as encouraging self-awareness, communication, and diversity of viewpoints.

Paradoxically, pure rationality may also thwart successful learning. Organizational learning sometimes flourishes through unexpected encounters, foolish behavior, idiot thoughts, chance events, serendipitous findings, etc. This is especially true for learning from others and even more so for creative learning.

Given that all four types of learning depend on each other, organizations are faced with the challenge of balancing rationality with irrationality.

Surely, explicitly approaching organizational learning from a post modernistic viewpoint requires more than what has been offered in the present thesis. It is my impression that organizational learning and in particular creative learning, could be interesting subjects of future post modernistic analysis.

10.4 CONTRIBUTION TO EXISTING KNOWLEDGE

In a oft cited article, Huber (1991) describes and criticizes some of the literature on aspects of organizational learning while frequently referring to the need for further

empirical research. Some of these knowledge gaps have been addressed by the two empirical studies discussed in this thesis.

For example, he observes that March and Olsen (1976) are two of the few researchers who describe instances of unintentional or unsystematic learning.

"Other than these retrospective interpretations, there appear to be few if any published observational or archival studies where unintentional or unsystematic organizational learning was the focal topic of interest. Systematic field studies of unintentional organizational learning would considerably enhance our understanding of the phenomenon and could serve as bases for critiquing an guiding laboratory and analytical work" (Huber 1991, p. 94).

Both the AZ case and the case of Lease Co reveal unintentional and unsystematic learning. These processes of learning could only have been analyzed by studying the processes at the moment they occurred.

Huber also refers to the need of empirical studies of knowledge acquisition through "grafting on new members who possess knowledge not previously available within the organization".

Again, the AZ case provides a vivid example of this specific aspect of learning.

Furthermore, Huber observes that:

"(i)n spite of the importance of organizational experiments as learning mechanisms... the literature contains very few studies of experimentation by organizations. What antecedent conditions favor or lead to organizational experiments? High trust? High need for performance? A culture where tolerance for mistakes is central?" (Huber 1991, p. 92)

These aspects of learning have been addressed by the introduction of the Lease Co case.

More fundamental and less focussed on empirical research, Huber concludes his critical review in the following way:

"A number of conclusions follow from this examination of organizational learning. One is that the organizational processes and subprocesses that

contribute to changes in the range of an organization's potential behaviors are more numerous and varied than a small sampling of the organizational science literature might suggest. While any one research group can ignore this fact with little peril to itself, the field as a whole cannot. A second conclusion is that, with a few exceptions, there is little in the way of substantiated theory concerning organizational learning and there is considerable need and opportunity to fill in the many gaps.

A third conclusion flies in the face of the normal science paradigm and contributes to the just-noted lack of substantiated theory - the researchers who have studied organizational learning apparently have, to a surprising degree, not used the results from previous research to design or interpret their own research. Another conclusion, also contrary to the advice that scientists frequently give to each other, is that there is little cross-fertilization or synthesis of work done by different research groups or on different but related aspects of organizational learning. (An exception to this conclusion is that James G. March had made important contributions in a number of areas and has provided a number of integrative works.)" (Huber 1991, p. 108).

Although I do not think this thesis has (and could have) provided **the** substantiated and integrated theory on organizational learning, it is hopefully a step forward in that direction. The thesis integrates the various and often distinct perspectives on organizational learning. Because every perspective on organizational learning can be criticized for having one or more hidden assumptions or biases that assure an unnecessary focus on certain directions while overlooking others, a pure integration of the diverse literature on organizational learning did not suffice. Consequently, I tried to reshuffle the conventional ideas on organizational learning and mix them with theories from other disciplines and fields of interests among which theories on innovation, social constructivist theories, theories on social psychology, theories on institutionalism. The end product of this mixture was further influenced by ideas that emerged out of the two empirical research projects, by personal and vicarious experiences, as well as by the substantial work of March and his friends on organizational behavior.

10.5 RECOMMENDATIONS FOR FURTHER RESEARCH

This present thesis should be considered as an exploratory study of organizational learning. In particular, the aim has been to explore what the concept of organizational learning means, how it occurs in practice, what the possibilities are to promote it and what we can expect of the role of information systems during learning. All these questions had not yet been treated sufficiently in a rigorous scientific manner; there was consequently a gap in theoretical understanding. However, it was not my aim to fill this gap completely with scientific evidence. Given that the concept is at the frontiers of theoretical understanding, a first step towards gathering scientific evidence about it is to explore its nature and being. This is what I hope to have achieved with the present thesis.

According to standard research practice, the next step in establishing scientific evidence is to test the ideas that emerged from this exploratory effort. As an attempt to come together with the scientific community, several ideas introduced in this thesis will be rewritten as questions for further research.

Of course, there is also another reason why further research is needed. I cannot claim that this exploratory study covers all subjects at the same level of detail. It is clear that choices had to be made. For reasons of space and time, but certainly also for reasons of ignorance, various interesting territories have been left out. These domains also merit a cursory glance.

Above all, more empirical research on the processes through which organizations learn is needed. Given the often unplanned, unsystematic, irrational, and unintentional nature of learning, this research can only yield interesting findings when it is of a qualitative, longitudinal nature.

Detailed research of this kind may provide more knowledge about the processes of internalization and externalization, processes of interpreting feedback information, processes of imitation, processes of creating new knowledge, and about the actual process of balancing the four types of learning. Given the central role of human beings and their private individual beliefs during these processes of learning, participant observation and other forms of ethnographic organizational studies are the most suitable to conduct this kind of research.

Empirical research is further needed on the effects of the use of knowledge

management systems on the learning capacity of organizations.

- What are the specific requirements of such systems?
- Under what conditions are people willing and able to externalize their private knowledge?
- How do we up-date these systems?
- What are the unintended consequences of the implementation of knowledge management (systems)?

More empirical research is needed on the role of Internet and World Wide Web during organizational learning; it would be particularly useful in studying 'learning from others' and 'creative learning'. World Wide Web has just recently entered the field of organizations. Although organizations have certainly gained learning-experience while using the system, results of this learning has not yet been reported, at least not in the field of information systems' or organization studies. Given this relatively new territory, research calls for empirical exploration, such as qualitative (ethnographic) case studies.

Although the interest in organizational memory is growing, there is still no clear understanding of this concept. The construct of organizational memory is clearly important to the idea of organizational learning, but has studied very infrequently. Consequently, just as organizational learning called for an exploratory study, the same applies to the concept of 'organizational memory'.

Again, just as is the case for organizational learning, organizational memory can be considered as a generic phenomenon. Every organization has at least one, but probably multiple, memories. As Huber (1991) already advocated half a decade ago, but what is still not well understood, is the extent to which non-routine information is deliberately stored to be used as a basis for future learning practices.

There is an interesting area that has not yet been covered by past or present research. This concerns the research question: "Why has organizational learning become so popular at the moment while its genesis lies somewhere around the turn of the century?". Is the rise of a 'knowledge society' and the increasing turbulence of environments, the only explanation for this popularity or are there more? The same question can be posed with respect to the sudden rise in popularity of the notion of

'knowledge management'.

Related to this is the question of the 'price of learning'. Whereas internal learning, feedback learning and to a lesser extent learning from others are frequently occurring organizational processes, creative learning is not (March 1991). This is predominantly so because of the inherent conservatism of organizations; creativity seems a difficult goal to achieve. (March 1991). Given this difficulty in fostering creative learning, it would be interesting to study the returns of learning. We could think for example of time, attention, risks and organizational resources (people, money, goodwill), as prices to be paid when organizations want to engage in learning. When we set this against the perennial ups and downs of business cycles (Perez 1985), addressing this issue may reveal interesting ideas related to the question of the present popularity of organizational learning.

Several organizational issues are currently the subject of intense discussion, such as outsourcing, virtual organizations, flexible work, teleworking, Total Quality Management, Business Process Redesign, to name but a few. They all have their implications for organizational learning. I have considered briefly some of these issues but they certainly need more research attention. For example:

- To what extent are organizations able to construct organizational knowledge when the organizational members only interact with each other through IT media such as e-mail?
- Given the focus on short term efficiency, what are the implications of Total Quality Management techniques for organizational learning?
- What are the implications of outsourcing for the learning capacity of the organization and what does this imply in the long run?
- Under what conditions do Business Process Redesign-efforts result in successful reformations or are its claims of radicalism and novelty indeed exaggerated (Grint et al 1995)?

More research is needed on the possibilities and potentials of doing ethnographic research to inform organizational practitioners about the actual organizational learning processes that occur within organizations.

More conceptual work is needed on the relation between organizational learning and post modernism, and in particular on the issue of creative learning and the use of

Alien Information systems.

Finally, more technically oriented research is needed on the design of information systems that support organizational learning processes.

In general, I hope this present thesis will spur future research studies to treat organizational learning as a **process** rather than an **outcome**. Researchers should spend more effort in studying how improvement and intelligence can be promoted by means of learning processes.

APPENDIX I

ASSESSING ORGANIZATIONAL LEARNING CAPACITY

- 1) *Is there a firm awareness of the actions taking place within the organization?*
- 2) *Is there an understanding of the reasons for these actions?*
- 3) *To what extent are individual beliefs related to the organizational knowledge?*
- 4) *To what extent does the organization also respond to environmental reactions?*
- 5) *Are these reactions based on organizational actions?*
- 6) *Are these reactions interpreted as intended by the environment?*
- 7) *Does the organization also make use of the experience of other organizations?*
- 8) *To what extent does this external knowledge correspond to existing knowledge?*
- 9) *Does the organization consider alternative models to imitate?*
- 10) *Does the organization also allow for experimenting and creativity without wishing to achieve results in the short run?*
- 11) *Is there enough internal communication to spread the experience of creative learning among organizational members?*

ad 1) The first question refers to the possible occurrence of audience learning as mentioned in chapter four and in section 8.2. Managers are often unaware of actual learning processes which are taking place within the organization. Consequently, the first step in assessing current learning capacity of the organization is to understand the actual learning processes. This requires close contact with the various communities of practices that exist within the organization. In case audience learning occurs, organizations and managers should ask themselves why the organization allows for audience learning and how the level of internal communication can be improved.

ad 2) In inquiring whether managers understand the reasons behind individual actions, I refer to the possible occurrence of restrained learning. Restrained learning occurs in those cases in which individual learning is frustrated. Although individuals draw their own conclusions based on experience, they cannot put these into practice; they may be constrained, for example, by their job descriptions dictated by management. Consequently, being aware of actions within an organization is not enough to understand actual learning processes. Organizational learning may be hampered if managers overlook the actual theories-in-use. Again, managers should ask themselves why the organization allows for restrained learning. Restrained learning will be avoided when organizations stimulate the communication of private individual beliefs. In the next chapter, I will discuss the use of information systems to support this information exchange.

ad 3) The question to what extent individual beliefs are related to present organizational knowledge, refers to the possible occurrence of anarchistic learning. When individual beliefs are not very much in line with present organizational knowledge, this could have negative consequences. Individuals may not in fact share their personal beliefs. When differing views might bring valuable changes to the organization, a certain degree of anarchistic learning might be helpful. Given that past experiences often dominate, learning from these different views often requires a carefully monitored learning process. When assimilation of the different views does not succeed, in other words when mutual learning is unbalanced, individuals become too much disassociated from the organization to act as organizational members. In these instances, their learning remains individual learning and does not contribute to any organizational level of learning. Adjusting training and

socialization practices to allow for more mutual learning could be a possible solution to stimulate anarchistic learning.

4) Questions one to three referred to internal learning. As argued in section 8.3, internal learning should be balanced with feedback learning in order to understand the effects of organizational actions and determine whether actions need to be adjusted to environmental demands. Question four addresses the degree in which organizations allow for this feedback information. The first step is to conduct a stakeholder analysis by listing actors, perceived as relevant, within the environment from which the organization acquires feedback information. This list would possibly reveal the existence of actors who might be important but who are never perceived as such.

5) In deciding whether environmental reactions are based on organizational action, the possible existence of 'superstitious learning' is addressed. Superstitious learning occurs when the organization assumes that environmental reactions are based on organizational action while in fact the environment reacts independently of these actions. In order to avoid superstitious learning, the organization should have a sound understanding of the reasons behind environmental reactions. This requires rich communication between the various stakeholders in the organization.

6) The next question deals with interpretation of these environmental reactions and refers to learning under ambiguity. Learning under ambiguity happens when environmental (re)actions are interpreted differently than was intended by the environment. A single (re)action may result in multiple explanations. In case organizations are unaware of the existence of multiple explanations, learning under ambiguity might be a hinderance toward organizational learning. Consequently, the first step is to understand its possible occurrence and the reason why it occurred. In itself, multiple interpretations may contribute to diversity and consequently to a (re)construction of organizational knowledge. However, in order to benefit from existing multiple interpretations, they should be shared amongst members in the organization. More or less autonomous units connected to each other through various communication channels, could support the existence and sharing of multiple interpretations.

7) Whereas questions five and six referred to feedback learning, the question whether the organization also makes use of the experience of other organizations refers to balancing feedback learning with processes of learning from others. Without learning from the experience of other organizations, organizational learning might result in unintended conservatism or path dependency. The organization is focussed on the effectiveness of its status quo while it overlooks possible alternative ways of acting or alternative environments to respond to.

8) When organizations do indeed engage in learning from others, it is important to assure that the external knowledge from which the organization learns corresponds to some extent to existing organizational knowledge. Attractiveness of ideas, products, technologies or other innovations is not a guarantee to success. The rapid changes of innovations within the IT business for example have seduced many IT managers to adopt them without considering the degree of readiness for them within the organization (Davenport 1996). The gap between existing knowledge and the new knowledge that the organization wishes to integrate, should not be too big because in this way implementation problems can be avoided. Again, this requires self-awareness as well as intense communication both within and outside the organization.

9) From time to time, organizations should consider alternative models to imitate with the aim of discouraging path dependency. Again, a stakeholder analysis consisting of environmental actors who are presently perceived as relevant and who could be of relevance in the future, might provide insight in current knowledge-gaps. It is also important to understand why the organization does not consider alternative sources of external knowledge to imitate. Information systems that are used to monitor the environment may be too focussed for example.

10) The question whether the organization also allows for experimenting and creativity addresses the issue of balancing creative learning with the previously discussed types of learning. Of course, the need and possibility to engage in creative learning depends to a great extent on the slack resources of the organization as well as on the degree in which the environment is perceived as being uncertain. In most cases however, an absence of risk-taking, experimenting, playfulness, and creativity, will increase the chance of falling

in the trap of path dependency with its negative consequences in the long run. For one, creative learning is necessary in order for an organization to be or to remain ahead of its competitors. Dependence on other organizations to gain new knowledge also causes the organization to confront problems of assimilating the knowledge to the existing knowledge as discussed under question eight. This can result in even more problematic situations when we consider the fast changing environments with which most organizations are coping nowadays. Creating new knowledge through creative learning is also important in order to create and maintain the capacity to recognize and absorb new external knowledge.

11) The last question deals with the sharing of the results of creative learning and refers to the link between creative learning and internal learning. After all, when outcomes of creative learning are not spread among organizational members, organizations cannot capitalize on these experiences. This implies that actors engaging in creative learning should to some extent be integrated within the organization as to enable the diffusion of experiences among the other organizational members. As mentioned earlier, this need to communicate experiences is also necessary to enable learning from others, that is to be able to recognize the value of new, external knowledge, assimilate it, and apply it.

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NEDERLANDSE SAMENVATTING (SUMMARY IN DUTCH)

De aandacht voor 'organizational learning' neemt toe, zo blijkt uit de vele artikelen en boeken die de laatste tijd over dit onderwerp verschijnen, en de conferenties en workshops die eraan worden gewijd. Hoewel er blijkbaar behoefte bestaat het leren van organisaties te bevorderen, heerst er over de betekenis van het begrip 'organizational learning' nog veel onduidelijkheid. Dit kan onder andere worden afgeleid uit de inhoud van deze boeken, artikelen en congressen. 'Organizational learning' wordt op uiteenlopende wijze benaderd. Het ontbreekt aan een gedeelde opvatting of benadering die het begrip de benodigde theoretische onderbouwing zou verschaffen. Het gevaar dreigt dat het concept binnen afzienbare tijd wordt bestempeld als het 'management buzzword' van de jaren negentig.

Dit proefschrift is allereerst bedoeld om het concept te verduidelijken en theoretisch te onderbouwen. Door middel van theoretische exploratie, aangevuld met empirische inzichten, is getracht een wetenschappelijke bijdrage te leveren aan de discussie over de betekenis van 'organizational learning'. De aandacht is daarbij voornamelijk gericht op de dynamiek van organisatorische leerprocessen. Door leren als een proces te beschouwen, komen problemen en complicaties aan het licht die het resultaat van leren negatief kunnen beïnvloeden. Een procesbenadering maakt het mogelijk een beter inzicht te verschaffen in de leercapaciteiten van organisaties. Dit is tevens de tweede doelstelling van het proefschrift: gebaseerd op theoretische en empirische inzichten in de wijze waarop organisaties leren, worden er uitspraken gedaan over het voorkómen van leerproblemen en het bevorderen van leercapaciteiten. ||

Het proefschrift bestaat uit drie delen. In het eerste deel wordt er gezocht naar een theorie over 'organizational learning'. Deze zoektocht leidt tot de conclusie dat de literatuur zeer divers is en een aantal tekortkomingen kent. In reactie hierop wordt in deel twee een alternatieve benadering van leren geïntroduceerd. In deel drie wordt op basis van deze theoretische excursie geanalyseerd hoe organisaties hun leervermogen kunnen bevorderen.

Deel I: Op zoek naar een theorie over organizational learning

Duidelijkheid verschaffen over de betekenis van het begrip 'organizational learning' vergt allereerst de integratie van verschillende benaderingen ervan.

Hoofdstuk twee bevat een beschrijving van zes verschillende benaderingen van 'organizational learning'.

'Adaptief' leren, een van de oudste benaderingen, is voornamelijk gericht op aanpassing aan de omgeving. In de 'incrementele innovatie'-benadering is leren het diffusie-proces van externe kennis. Het perspectief dat is gericht op het 'uitwisselen van aannames' berust op het uitgangspunt dat leren plaatsvindt als individuen hun persoonlijke opvattingen aan elkaar kenbaar maken en de basis-aannames van de organisatie ter discussie stellen. In het 'organisatorische kennis'-perspectief is leren een informatieverwerkend proces waarin organisatorische kennis wordt ontwikkeld. De 'lerende organisatie' heeft als perspectief een specifieke organisatievorm die positieve resultaten van leren bevordert. Het 'sociaal-constructivistische'-perspectief is gericht op informele leerprocessen die plaats vinden gedurende dagelijkse activiteiten.

Hoewel deze zes benaderingen elk hun eigen waardevolle bijdrage leveren, vormen ze in combinatie met elkaar nog geen bevredigend alternatief. Alle benaderingen berusten namelijk in meer of mindere mate op aannames die ertoe leiden dat alternatieven over het hoofd worden gezien. In hoofdstuk drie worden vijf van zulke 'biases' besproken, alsmede de mogelijkheden ze te vermijden.

Allereerst is er in de literatuur de neiging waarneembaar aan te nemen dat leren per definitie resulteert in verbetering, intelligentie of vernieuwing. Dit vooruitgangsgeloof is het resultaat van een uitkomst-benadering van leren. Leren kan echter ook resulteren in stabiliteit, en zelfs in verslechtering of zelfdestructie. Om deze 'bias' te voorkómen, wordt leren in dit proefschrift benaderd als proces, zodat de dynamiek van leren, inclusief de mogelijke leerproblemen, aan de orde kan worden gesteld.

In de literatuur wordt leren veelal opgevat als individueel leren. Om leren op een hoger niveau van abstractie te brengen, wordt in dit proefschrift gebruik gemaakt van de 'institutionalisatie'-theorie van Berger en Luckman (1966).

In de literatuur overheerst het systeemdenken als model om leermotieven te verklaren. Als gevolg hiervan ^{blijven} worden andere motieven zoals experimenteren en de wens van individuen om zich te bewijzen of risico's te nemen, ten onrechte buiten beschouwing. Ook de factor toeval speelt in het systeemdenken geen rol van betekenis.

In de literatuur treft men voorts vaak de uitgangspunten aan dat organisaties kunnen anticiperen op hun toekomst en dat leren radicale veranderingen tot stand brengt.

- ✓ v. Leren gebeurt echter ook vaak onopgemerkt of bij toeval. Daarnaast belemmeren de geschiedenis en de bestaande kennis van de organisatie de mogelijkheden voor radicale vernieuwingen. Anticiperen en 'double loop learning' zijn wel mogelijk, maar spelen in de praktijk niet de doorslaggevende rol die sommigen veronderstellen. *hoe weezijdel?*

Ten slotte wordt leren wel gezien als een één- of tweezijdig fenomeen. Er is dan sprake van slechts één aspect van leren, bijvoorbeeld het leren tijdens incrementele innovaties, óf twee, tegengestelde processen waarbij één inferieur is. 'Single loop learning' is bijvoorbeeld ondergeschikt aan 'double loop learning' (Argyris and Schön 1978) en 'adaptive learning' is minder waard dan 'generative learning' (Senge 1992). In dit proefschrift worden vier vormen van leren geïntroduceerd die alle, anders dan in de literatuur, wederzijds van elkaar afhankelijk zijn.

Deel II: Een typologie van 'organizational learning'-processen

Nadat in het eerste deel van dit proefschrift is aangegeven wat in de literatuur de problemen zijn met 'organizational learning', wordt in deel twee een mogelijke oplossing gepresenteerd. Daartoe worden de waardevolle bijdragen van de zes beschouwingen over leren geïntegreerd, rekening houdend met de vijf theoretische condities zoals besproken in hoofdstuk drie.

De hoofdstukken vier tot en met zeven behandelen de vier conceptueel verschillende leervormen. Er is vanuit gegaan dat leren een evolutionair proces is waarin valkuilen en obstakels kunnen vóórkomen die de uitkomst van leren sterk beïnvloeden. De vier wijzen van leren die worden besproken zijn 'intern leren', 'feedback leren', 'leren van anderen' en 'creatief leren'. De argumentaties berusten op een combinatie van bestaande theoretische inzichten en op twee case studies. De eerste studie handelt over de leerproblemen die een organisatie-afdeling 'Informatiesystemen' ondervond of juist niet onderkende. De tweede studie gaat over het leerproces dat een groep 'innovators' doormaakt tijdens de ontwikkeling van een product-idee. Beide studies dienen ter illustratie van de theorie.

Intern leren is het basisproces waarin de organisatie leert van haar leden en de leden van de organisatie. Het berust op de drie momenten van Berger en Luckman (1966):

externalisatie, objectificatie, internalisatie. Intern leren is, net als andere vormen van leren, niet gevrijwaard van valkuilen en obstakels.

Van 'feedback leren' is sprake als de organisatie leert van feedback-informatie uit de omgeving. Een belangrijk deel van de literatuur over 'organizational learning' is gebaseerd op deze vorm van leren.

'Leren van anderen' betreft het leren van de ervaringen van andere organisaties. Deze vorm van leren kan doelgericht zijn, bijvoorbeeld door middel van 'benchmarking'. Vaak echter is er sprake van min of meer onbewust leerproces, zoals bij het inhuren van nieuwe medewerkers of organisatie-adviseurs.

'Creatief leren' betreft het opdoen van nieuwe kennis door middel van experimenteren, exploreren en creëren. De ideeën achter de 'lerende organisatie' zijn voornamelijk gebaseerd op deze vorm van leren.

Deel III: Implicaties

Deel drie van het proefschrift behandelt de implicaties van wat tot zover hoofdzakelijk op een conceptueel niveau is beschreven. In hoofdstuk acht wordt de vraag gesteld: "hoe kunnen organisatorische leerprocessen resulteren in positieve uitkomsten zoals verbetering, intelligentie en innovatie?". Gegeven het feit dat leren om verschillende redenen kan worden bemoeilijkt, is de aandacht vooral gericht op de oorzaken van deze leerproblemen en het vermijden ervan. Leerproblemen kunnen worden herleid tot twee fundamentele oorzaken: 'focussed' leren en ongebalanceerd leren.

'Focussed' leren is het gevolg van een beperkte selectie en interpretatie van informatie. De oorzaken hiervan zijn de macht van referentiegroepen, zelf-referentieel informatiegebruik, fysieke en culturele condities, specialisatie, en het feit dat leerprocessen vaak onopgemerkt blijven. 'Focussed' leren leidt vaak tot een 'path-dependent' ontwikkelingsproces. 'Focussed' leren kan worden voorkómen door een betere communicatie en een hoger zelfbewustzijn. De macht van referentiegroepen en zelf-referentieel informatiegebruik vraagt daarnaast vaak om een 'derde actor', die in staat is te interveniëren en, als buitenstaander, leerproblemen te analyseren.

Van ongebalanceerd leren is sprake in situaties waarin de organisatie teveel is gericht op één van de vier leervormen. Intern leren bijvoorbeeld zou moeten worden aangevuld met vormen van feedback leren, omdat anders onherroepelijk 'path-dependency' optreedt en op de langere termijn zelfs zelfdestructie. Het balanceren van de vier

leervormen is niet alleen noodzakelijk om 'path-dependency' te vermijden, maar ook om andere negatieve resultaten te voorkómen. Hoofdstuk acht bevat een beschouwing over de wederzijdse afhankelijkheden van alle mogelijke combinaties van leervormen.

Organisaties kunnen ook gebruik maken van informatiesystemen als hulpmiddel om hun leerprocessen te ondersteunen. In hoofdstuk negen van het proefschrift wordt de rol van informatiesystemen tijdens leren geanalyseerd. Zes informatie-intensieve processen die het leren kenmerken worden onderscheiden: externalisatie, objectificatie, internalisatie, selectie, interpretatie en idee-generatie.

Externalisatie kan worden ondersteund met kennis-management systemen, zoals Intranet en Lotus Notes. De discussie is voornamelijk gericht op de beperkingen van deze systemen.

Informatiesystemen die de objectificatie van kennis ondersteunen, worden 'Organizational Memory Information Systems' (OMIS) genoemd. Ook bij deze systemen wordt een aantal kritische kanttekeningen geplaatst.

Gedurende het proces waarin organisatorische kennis wordt geïnternaliseerd, spelen informatiesystemen een rol bij het verspreiden van basisaannames. Als gevolg hiervan fungeren informatiesystemen vaak als systemen van manipulatie.

Ook het selecteren van kennis en informatie beïnvloedt het succes van leren. Zoals is betoogd in hoofdstuk acht, zijn leerproblemen dikwijls het gevolg van 'focussed' leren. In dit hoofdstuk wordt gesteld dat de meeste informatiesystemen deze wijze van leren bevorderen en zo de problemen mede veroorzaken.

Het interpreteren van informatie kan ook het succes van leren beïnvloeden. Terwijl verschillende interpretaties onduidelijkheden met zich kunnen brengen, kunnen gedeelde interpretaties leiden tot 'path-dependency'. Informatiesystemen, zoals Groupware systemen, kunnen het uitwisselen van verschillende interpretaties mogelijk maken.

Informatiesystemen die het proces van idee-generatie ondersteunen, zijn niet alleen van belang voor het bevorderen van creatief leren, ze kunnen ook nodig zijn ter voorkoming van 'focussed' leren. De mogelijkheden van simulatie-software en Groupware-systemen, de meest geaccepteerde informatiesystemen die idee-generatie bevorderen, worden kort besproken. Onbeperkte exploratie vergt echter om andere systemen. Als alternatief worden 'Alien Information Systems' (AIS) voorgesteld. AIS's bestaan uit informatie waarvan de relevantie niet op voorhand kan worden vastgesteld,

waardoor toeval en serendipiteit een grotere rol kunnen spelen. Informatiesystemen die tot deze categorie behoren zijn bijvoorbeeld bibliotheken, Intranet en Internet.

Het hoofdstuk mondt uit in de conclusie dat meer onderzoek nodig is naar de mogelijkheden van informatiesystemen om 'organizational learning' te bevorderen.

The Tinbergen Institute is the Netherlands Research Institute and Graduate School for Economics and Business, which was founded in 1987 by the Faculties of Economics and Econometrics of the Erasmus University in Rotterdam, the University of Amsterdam and the Free University in Amsterdam. The Institute is named after the late Professor Jan Tinbergen, Dutch Nobel Prize laureate in economics in 1969.

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